1859 FIFTY-NINTH YEAR 1917

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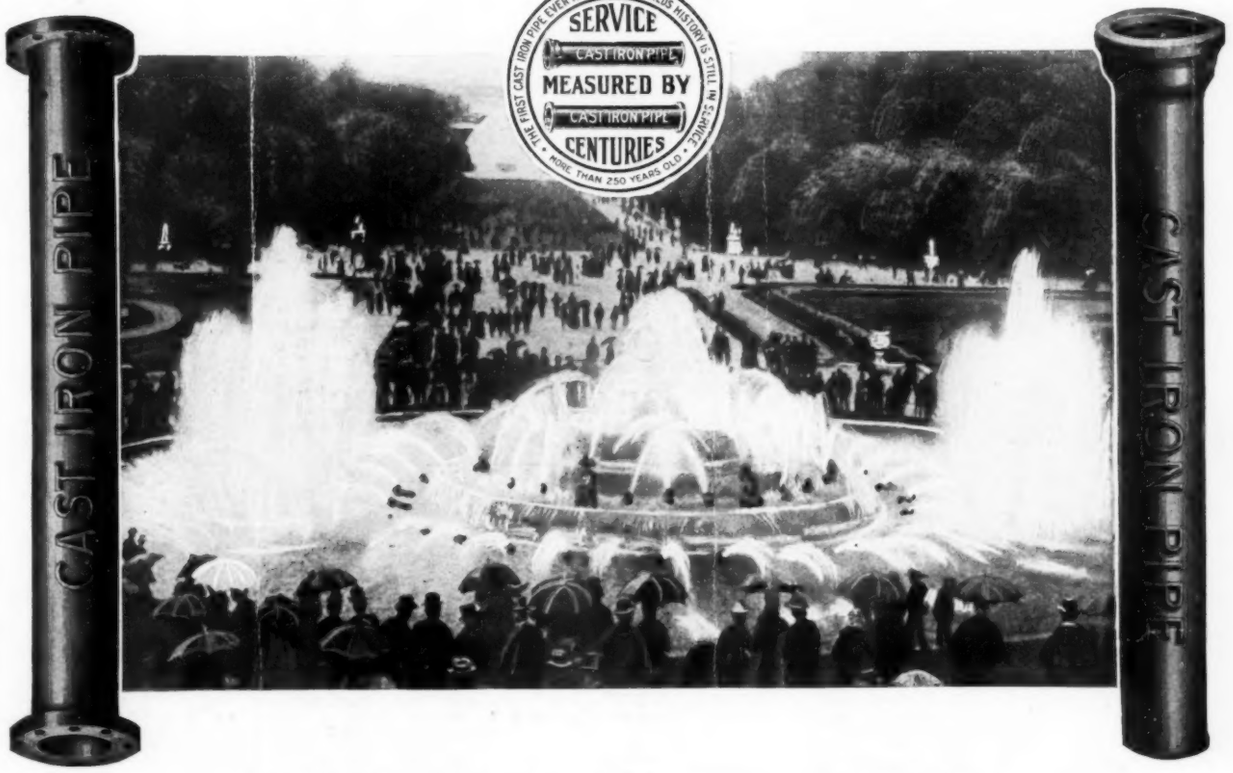
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SERVICE TALES

The Veteran and the Recruit

1817

BESIDE the fountains of Versailles he sat, that veteran of the Grand Army—sat and dreamed of service given and victories won for France and for Napoleon. The sunlight danced upon his silvered hair and upon the silvery spray of that ever falling water—water that ever changed but never failed—never failed because a century and a half before, in the days of Louis XIV, Cast Iron Pipe had been installed to serve those fountains.

As France has depended upon her children for service to "La Patrie," so have her children depended upon Cast Iron Pipe for service to "Les Grandes Eaux." The medal and the empty sleeve pinned to the breast of that veteran, and the silvery falling spray of those fountains, are alike visible proofs of service to France.

1917

BESIDE the fountains of Versailles he stood, that youth aflame with patriotic fire—stood enthralled by the beauty of those fountains which a century before had lighted the fading eyes of that veteran of Napoleonic wars.

A last lingering look at the falling water, and away to glorious service for France and for all mankind. Service to France—that faithful service rendered alike by the veteran of 1817, the recruit of 1917, and the Cast Iron Pipe of 1664.

Vive la France! Yes, and
Vive Le Conduit en Fonte!

THE CAST IRON PIPE PUBLICITY BUREAU

1 BROADWAY, NEW YORK

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KOPPERS

BY-PRODUCT
COKE AND GAS OVENS

The most efficient method of carbonizing coal is in KOPPERS OVENS and the best coke and by-products are produced by this process.

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Ammonia Recovery Plants
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Field for Gas-Fired Ovens So Wide as to Seem Almost Limitless

Almost Forty Lines of Industry Cited Which Use One Form of Oven or Another—General Outline of Possibilities

By GILBERT C. SHADWELL

To attempt to cover even a quarter of the oven business would be distinctly impossible—the uses of ovens are so numerous that the task would involve several years' work. But some idea may be conveyed to readers by touching on the subject in a general way.

A rough idea of the great field for ovens will be gained by referring to the following table which shows a few of the industries in which ovens are used and for what purposes:

While this list is very incomplete a glance will show how great is the field for the gas man in the oven business.

Fig. 1 shows a group of various types of gas-fired ovens indicated as I, II, III, IV, V, VI, VII.

Type I has single walls, is built of galvanized steel and is not lined. It is direct fired, has heavy angle iron frame and is suitable for warming, drying, lacquering, etc., up to about 300 deg. Fahr.

Industries in Which Ovens Are Used	Type of Oven or Work Performed.
Artificial Florists	Drying ovens.
Automobile	Japanning bodies, fenders, chassis and other parts. Also lacquering certain brass parts, etc.
Bicycle	Enameling frames, etc.
Badge Makers	Lacquering badges.
Bakers and Confectioners	Baking bread, etc.
Barbers' Shops	Double walled warming ovens for dry sterilizing.
Bookbinders	Drying ovens.
Brewers and Bottlers	Sterilizing and drying ovens.
Builders and Lumber Merchants	Lumber drying.
Can and Tinware Manufacturers	Drying cans after water test.
Carpenters and Cabinet Makers	Drying ovens.
Carriage and Wagon Builders	Japanning, varnish baking, lacquering, wood drying, etc.
Chemists, Chemical Manufacturers and Mfg. Druggists	Drying herbs, pills, crystals, powders, photographic plates, sterilizing bottles, test tubes, etc.
Cigar, Cigarette and Tobacco Mfrs	Drying and curing tobacco.
Cleaners and Dyers, Lace Mfrs., Clothing, Shirtwaist and Underwear Mfrs	Drying lace, cloth, yarns, etc., embroidery singeing ovens, drying yarns, cloth, etc.
Cutlery and Tool Mfrs	Annealing ovens, enameling ovens, ovens for drying razor blades, etc.
Drug Stores	Drying and sterilizing.
Electrotypers and Engravers	Wax melting ovens, drying ovens, etc.
Harness Makers and Leather Manufacturers	Drying, warming, etc.
Hospitals, etc.	Drying, sterilizing, etc.
Hotels, Restaurants, etc	Warming plates, etc.
Implement and Tool Manufacturers	Japanning, lacquering, etc.
Iron and Brass Foundries	Core drying, japanning, etc.

Industries in Which Ovens Are Used (*Continued*)	Type of Oven or Work Performed.
Jewelry Manufacturers, etc.	Annealing, enameling, lacquering, etc.
Laundries	Drying.
Machine and Engine Building Shops	Japanning, enameling, sherardizing, core drying, etc.
Manufacturers of Electrical Equipment	Armature baking, japanning, lacquering, drying, etc.
Photographic Houses	Drying lithographic work, books, etc., drying plates, films, etc.
Tailors and Hatters	Drying.
Tin Plate Decorators	Lacquering tin plate.
Woodworkers and Furniture Mfrs.	Wood drying, etc.

Types II, III and V are indirect heated ovens of various kinds and sizes. Ovens of this kind are usually made with double walls and are insulated with 1½-in. cellular asbestos board or its equivalent. Usually, also, two flue outlets are provided. This type of oven is always to be recommended where inflammable vapors are given off. Owing to the fact that there is no opening from the burners to the oven they are quite safe and, as a rule, will operate up to 500 deg. Fahr. or even higher if specially built for enameling work.

Much japanning is done in these ovens. They are usually accepted as complying in every detail with the broad regulations of the different Boards of Fire Underwriters.

Type VII is the same as Type IV, but has single instead of double walls.

Type VI is a direct-fired japan oven, highly insulated with one inch cellular asbestos board. It is very efficient and usually employed for temperatures around 600 deg. Fahr. or so.

Low temperature ovens are particularly suitable for hotel and restaurant use for warming plates, dishes, buns, etc. They may also be employed for drying and lacquering where the pieces to be handled are of light weight and where a temperature of not more than 300 deg. Fahr. is required. They are also being extensively used for drying hair, drugs, special wood shapes, and many other materials too numerous to mention.

They are made in two styles, single wall and double wall. The double wall oven is preferable for most purposes. Direct heat is employed in both cases.

The process of japanning consists in coating products with a material known as japan (consisting of a mixture of different varnishes and other material) and then baking the product at a temperature of anywhere between 150 deg. Fahr. to 500 deg. Fahr., depending on the style of japan used.

It is neither painting nor is it enameling, for painted work is usually air-dried, whereas enameled work is baked from about 900 deg. Fahr. to almost 2,000 deg. Fahr. also depending on its nature.

This latter, it should be noted, refers to what is usually called vitreous enamel, the firing of which must be carried out in muffle furnaces at about a white heat which therefore puts a consideration of the subject outside the scope of the present article.

The matter of vitreous enamel, however, is mentioned because it is important that readers draw a proper distinction between it and that which is also often referred to as enamel such as is used on bicycle frames, etc. Such "enamels" are in effect merely high heat japans and are usually baked at about 400 deg. Fahr. to 600 deg. Fahr., although lower temperatures are often employed.

Japanning then is a subject which probably takes one of the highest places in the use of ovens.

Every day we see japanned goods. Typewriters, automobiles, adding machines, trays, metal chairs and other furniture parts—a thousand things, too numerous to mention. Fig. 2 shows an oven used for japanning of typewriters. This is an installation typical of many others throughout the country.

The application of the japans, etc., is too long a subject to be dealt with in the present article, but will be included in a later section of this subject together with other data of a like nature.

The baking, however, of

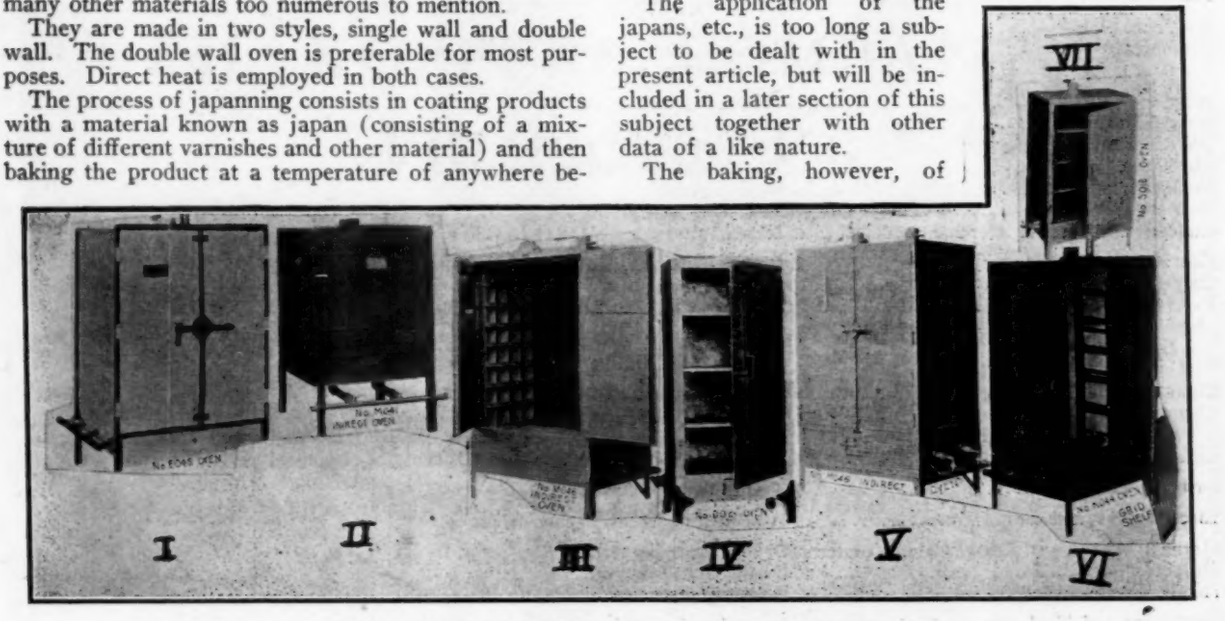


FIG. 1. GROUP OF VARIOUS TYPES OF GAS-FIRED OVENS.

japanned goods should usually be carried out in an oven of the indirect type so that there is no contact between the flame or flue gases and the products. This is because certain inflammable gases are given off from the japan and these are liable, when mixed with a certain proportion of air, to cause an explosion which might have disastrous results.

A safety trap door is sometimes included in the construction of all types of ovens (at the top) so that should there be an explosion there will be an outlet for the resultant gases to escape through and prevent damage to the oven.

The following table gives an idea of the usual run of standard sizes of japanning ovens:

Dimensions (inches) (Overall) Width	Depth	Height*	(Door Opening) Width	Height	Gas Con. (ins.)	Gas Cons. (cu. ft. per hr.)	Shipping Wght. S†	(lbs.) D†
18	12	27	15	16	⅛	15	55	65
22	12	32	18	21	⅛	20	65	70
25	14	39	20½	25½	⅛	25	85	100
27	15	42	22½	27	⅛	30	95	110
30	16	47	25	32½	⅛	35	110	135
32½	18	50	27½	35	⅛	40	135	160
37	20	56	30½	41	¼	45	190	230
46	24	68	36½	52	¼	50	250	320

* Including legs.
† S — Single Wall; D — Double Wall.

The general style of oven used for japanning, etc., are usually referred to as high temperature ovens and are constructed as portable ovens in some such sizes as the following:

Dimensions (inches) —Inside— Width	Depth	Height	Overall Height*	E Gas Cons.	E Gas Conn.	E Shipping Weight	H Gas Cons.	H Gas Conn.	H Shipping Weight	K Gas Cons.	K Gas Conn.	K Shipping Weight	M Gas Cons.	M Gas Conn.	M Shipping Weight
24	18	36	50	20	½	170	25	½	200	30	½	240	35	¾	285
30	24	42	56	25	½	190	30	½	250	35	¾	290	40	¾	360
30	30	48	64	30	½	250	35	¾	330	40	¾	425	45	¾	490
36	24	48	64	30	½	260	35	¾	340	40	¾	450	45	¾	550
36	30	54	70	40	¾	290	45	¾	400	50	¾	500	65	¾	625
36	36	60	76	50	¾	350	60	¾	500	65	¾	560	75	1	800
48	30	60	76	60	¾	575	70	1	750	75	1	900	90	1	1100
48	36	66	82	75	¾	610	85	1	800	90	1	950	110	1	1250
†54	36	66	82	90	1	780	110	1	875	110	1	1130	130	1	1400
†60	40	66	82	110	1	950	125	1¼	1000	140	1¼	1225	160	1¼	1600
†66	48	72	88	150	1¼	1100	175	1¼	1200	200	1¼	1400	225	1½	1900

* Height includes 6" legs.
† Has center post and center shelf rack 3" wide.

Or they may be built as stationary ovens out of brick, wood or other materials up to almost any size. Such large ovens are often referred to as chamber ovens and in many cases are built for coal or coke and provide a ready source for the use of gas in their conversion. This latter is a matter of greatest importance and will be dealt with separately.

High-temperature ovens whether portable or stationary are designed primarily for baking lacquer, japan, enamel, etc.

Doubts Practicability of Proposition to Utilize Low Grade Nitrates

In connection with the search for potash and nitrates in the United States the Government receives many reports of supposedly valuable discoveries. A letter recently received by the Geological Survey describes a cave in one of the Southern States which was worked by the Confederacy during the Civil War for potassium nitrate. This cave is said to contain at least 1,000,000 tons of nitrous earth, which, however, contains only 1 to 2 per cent of nitrate. The Survey now states that it seems very doubtful whether such material can be profitably used as a source of nitrate salts. The minimum grade of caliche now worked in the Chilean fields contains 12 per cent of sodium nitrate, and though there

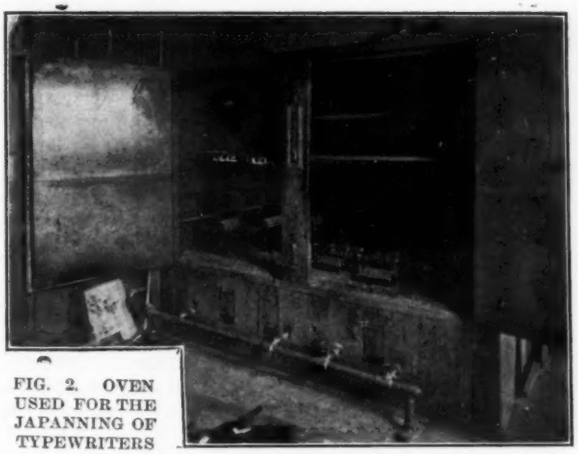


FIG. 2. OVEN USED FOR THE JAPANNING OF TYPEWRITERS

has been much criticism of the crudeness of the methods employed there, the work is done by very cheap Indian labor, and it is doubtful whether leaner material could be worked to advantage here, where the price of labor is so much higher. Several hundred thousand dollars has recently been expended in one of the Western States in testing the proposition to utilize low-grade nitrate. The results have been negative.

The nitrate caves in the South were worked during the Civil War by very crude methods. Generally the cave earth was shoveled into iron pots, where it was treated with water and heated over wood fires to leach out its soluble parts. The liquor was drawn from one pot into another and used for treating fresh material until it became a highly concentrated solution of nitrate salts. It was then drawn off and allowed to cool, whereupon the nitrate crystallized. The remaining liquor was the employed to leach fresh material and the crystals were separated and sacked for use.

The Effect of Gas Lighting Upon Ventilation

Thomas Scofield Asserts that Even in Room Without Ventilation Heat of Gas Lamps Will Force Injurious Gas Through Pores in Ceiling

The assertion that gas lighting vitiates the atmosphere is made by many people, not because they wish to condemn unjustly gas for illumination, but because they have been led in good faith to believe that the use of gas produces an alteration of the atmosphere that is harmful, declares Thomas Scofield in an article in the September *Bulletin* of the National Commercial Gas Association. The basis of condemnation is that gas requires oxygen to support its combustion, and in burning gives off a large amount of heat and carbon dioxide. It is claimed that the large amount of heat is objectionable because it increases the temperature and dries the air; that since the combustion of gas produces carbon dioxide its use will soon render the atmosphere impure hygienically, and that, because gas consumes oxygen in burning, it deprives the air of so great a quantity as to render it unfit to maintain health.

Occupants in Room So Denuded of Oxygen That Match Would Not Light Experience No Discomfort

It is true that oxygen is necessary to support combustion and that carbon dioxide and heat result from

this combustion of gas, but does this statement justify the condemnation of gas lighting? Is it fair to reject gas on these grounds without further investigation—to be so easily convinced that gas lighting is deleterious to health, and that its use is a violation of the laws of hygiene and sanitation? Before reaching a conclusion in regard to the effects of gas lighting we should investigate the subject thoroughly.

Ordinary air is chemically defined as a mechanical mixture of the gases oxygen and nitrogen, and contains 20.7 per cent by volume of oxygen and 79.3 per cent by volume of nitrogen. The combustion of 1 cu. ft. of gas uses up about 6 cu. ft. of air, which means that the atmosphere of a room where gas is used as the illuminant, is deprived of some of its oxygen. Experiments were performed by Dr. Leonard Hill and Lord Haldane to determine to what extent the oxygen of the air could be lowered by mechanical means without injury to life. Several persons were inclosed in an air-tight chamber during the experiment, until the air that they breathed contained only about 16 per cent of oxygen. They were unaware of any change due to the unusual atmospheric conditions and were extremely surprised to find that they were unable to light a match or smoke a cigarette; the percentage of oxygen being too low to support combustion. In the worst ventilated rooms, the percentage of oxygen has never been found to be less than 17.6 per cent, a greater diminution being prevented by the walls, ceilings and windows. The famous health resorts of the Swiss Mountains, Mount Moritz, for example, have concentrations considerably less than this.

Thermometer Has Very Limited Value in Determining Comfort of Body

The oxygen argument is one of the weapons upon which much stress has been laid in convincing people who are not familiar with the facts that the use of gas decreases the oxygen content of the atmosphere to such an extent that life is endangered. It is only when the oxygen concentration of the atmosphere is lowered below 14 per cent to 15 per cent that signs of insufficient oxygen arise. This will surely prove that the small reduction in the oxygen content of the atmosphere, which is brought about by the combustion of gas—say, 1.5 per cent under the worst possible conditions of ventilation—has not the slightest effect upon our health or comfort.

Sense of well-being depends very greatly upon the condition of the skin, and its ability to perform its functions. If the percentage of water vapor in the atmosphere is high, the evaporation from the body is greatly checked, but if the air is sufficiently removed from the saturation point the functions of the body proceed as they should and health is unimpaired.

In a crowded room the air confined between our bodies and clothes is warmed up to almost body temperature and saturated with moisture. Cooling by radiation, convection or evaporation, becomes almost impossible, and the result is that an unnatural sweating and flushing of the skin occur which raise the temperature of the skin. In consequence of this, blood is sent to the skin and stagnates there, thus depriving the brain and viscera of the ample volume of blood that they require, and from this condition arise the feelings of discomfort and fatigue. We see then, that much of our comfort depends upon temperature and humidity. The thermometer, however, is of very limited value in determining the comfort of the body, because it does not show the cooling effect of moving air or the change in cutaneous excitations, produced by the variations in the strength of air currents. For estimating the comfort and physical conditions of the atmosphere, we need an instrument to measure the rate of heat lost and not the average temperature.

The two most important factors of ventilation are: movement of the air to prevent stagnation, and maintenance of the air at a point sufficiently removed from its saturation point to allow the skin to do its necessary and beneficent work. Of these two factors, the more important is air movement, which may be obtained by fans, blowers, or other mechanical means, or by differences in temperature. For the production of wind and movement of the atmosphere, nature depends upon differences in air temperature, and from a hygienic standpoint, this is by far the best and most efficient way, because local draughts due to a mechanical means of expelling or producing air movement, are eliminated to a large extent. Heated air expands and rises, cooler air flowing in to take its place. This is the natural way and one which is most effective and least likely to be accompanied by draught.

Heat of Gas Mantle Lamp Six Times That of Electric Light of Equal Illuminating Power

R. ff. Pierce states that the heat from a gas mantle is about six times greater than that given off by a Mazda or tungsten electric light of equal illuminating power; it therefore follows that the ventilating effect is correspondingly greater. The large amount of heat given off by incandescent gas mantles is a point greatly in favor of gas utilization, because it directly affects ventilation, producing better ventilation without resorting to auxiliary means. Air movement is the important factor and there is no more powerful engine for producing air movement and circulation than heat.

Other factors influencing air movement are the diffusion and inter-diffusion between volumes of air at different temperatures. A word of explanation in regard to diffusion will probably make its meaning more clear. At the close of the eighteenth century, John Priestly discovered that gases, unlike liquids, could not be arranged in layers according to their specific gravity, but intermingled against the forces of gravity. Diffusion, therefore, may be defined as that property by which gases undergo a mingling, the rate of diffusion varying inversely with weight, a light gas diffusing more quickly than others, and a heavy gas more slowly. When diffusion has once taken place the gases diffused will not again separate but remain in perfect union. Physicists have shown by experiment that gases diffuse through porous solids with greater rapidity than they do when placed in contact, without being separated by an intervening medium.

Effect of Gas Lighting on Air Movement and Diffusion

But why is the phenomenon of air movement and diffusion brought about so effectually with gas lighting? Let us consider, for example, the combustion of 1 cu. ft. of gas. For complete combustion 1 cu. ft. of gas requires about 6 cu. ft. of air and yields about 1 cu. ft. of carbon dioxide and 1½ cu. ft. of water vapor. At first thought we at once conclude that in view of the fact that ordinary fresh air contains four parts of carbon dioxide per 10,000, a room lighted by a number of gas burners and containing people (who add carbon dioxide and organic emanations to the atmosphere) will soon have

its carbon dioxide raised in excess of the sanitary limit of 6 parts per 10,000 of air, and in a very short time will become so vitiated by organic matter as to be positively dangerous to health. However, because of the air currents and diffusion set up by temperature differences, the amount of carbon dioxide is very much less than it should be theoretically. If a room is made as air-tight as possible, the actual carbon dioxide content will be very low in comparison with the theoretical, be-

FACTORY A FRAME STRUCTURE WITH 20,000 SQ. FT. OF FLOOR AREA

cause of the atmospheric changes brought about by the use of gas for illumination.

Pores in Walls and Ceilings

Heated air rapidly rises, as we all know, and for this reason the foul air in a room is found at the ceiling. The air exhaled from the lungs, being at body temperature, at once rises to this point, together with the products of combustion from the gas burners which are at a higher temperature. This rapid uprush of air caused by the heated products of combustion, explains the beneficial influence of gas lighting upon ventilation. It produces currents and action, or a movement of the air, due entirely to the illuminant.

The walls, ceiling, brick, stone and various other materials used in building construction are full of minute openings which allow gases to diffuse through them with considerable rapidity, so that even though the ventilation of a room be omitted entirely, it will be found that the diffusion through the upper part of the room provides such a rapid egress for hot gases that they have not time to mingle with the lower atmosphere, and that cool air is continually being drawn in from beneath the doors and through other cracks and openings. The heat given off by an electric unit is so much less than that of a gas unit of the same illuminating power, that the carbon dioxide and organic chemical poisons exhaled while breathing, are not rapidly pulled up to the ceiling, but mingle with the air in the rest of the room. The air movement, so characteristic of gas lighting, is produced only to a small degree so that the polluted air gradually filters throughout the whole atmosphere. Stagnant air, and air containing organic matter which is not dissipated by means of air movement, has been scientifically condemned the world over by hygienists and medical authorities.

Let us now turn our attention to the sterilizing effect of the gas flame and its action in reducing the mass influence of pathogenic bacteria. The spread of contagious disease by impurities in the atmosphere is a cause of much distress and loss of life. Stagnant air laden with emanations from the skin and lungs of unhealthy people is perhaps the worst enemy of health. How can this influence of pathogenic bacteria be reduced? How can the form of illuminant be of assistance in ridding our atmosphere of these enemies of life? Dr. Rideal has made some very interesting observations in this connection.

The high temperature of an incandescent gas mantle (about 1,500 deg. Fahr.) and the minute traces of sulphur acids in the condensed water have a marked germicidal action, and the results clearly demonstrate the destruction of living germs by condensation of the moisture from the combustion of manufactured gas continually taking place on cool surfaces. This point demands special attention on the part of the hygienist.

Factory with 3,000 Sq. Ft. of Glass Exposure Heated by Gas

W. A. Moody Describes Installation in California Glove Factory Employing 300 Persons

House-heating by gas is becoming well known and accepted by those interested as one of the developments

AIR TAKEN TO HEATING SURFACES THROUGH DUCTS, DRAWN DOWN OVER THEM BY FANS AND BLOWN THROUGH HORIZONTAL AIR DUCT RUNNING LENGTHWISE OF BUILDING

of modern gas appliance manufactures that has proven a success. Gas salesmen are beginning to class the gas house-heating apparatus as staple merchandise. With increasing frequency, installations are made of such size and of such remarkable efficiency that one may well stop to consider the wonderful strides that have been taken in a comparatively new development, writes W. A. Moody, salesman in the Napa District for the Pacific Gas & Electric Company, in the *Public Service Magazine*.

Such an installation is that of the California Glove Company of Napa, California. Here is located the main factory of the company, in which nearly 20,000 sq. ft. of floor space are utilized in the manufacture of from 3,600 to 4,000 pairs of gloves daily, of every description.

The factory building is a two-story frame construction, 240 ft. long and 40 ft. wide, having 15 ft. ceilings. The first floor is used for offices, stock, sorting and cut-

ting. The second floor is used for the sewing and finishing operations.

Because of the different class of operations on the two floors, two heating units were installed. On the first floor the average temperature maintained is about five degrees less than on the upper floor, where the sewing and finishing work is done; therefore, the two smaller units were considered more economical from an operating standpoint than one large unit, and such was proven to be the case.

Window Exposure

When it is considered that this factory building is of frame construction and only partially sealed, also that the glass exposure amounts to nearly 3,000 sq. ft., it must be believed that we have faith in gas-heating and its ability to hold its own against any other form of heating.

On account of the ventilating conditions in the building a hot-air system was used. With this system the air in the building is reheated and distributed, or entirely fresh air is taken from the outside and heated for distribution.

1,250 Cu. Ft. Maximum Gas Consumption Per Hour

This air is taken to the heating surfaces through ducts, drawn down over the heating surfaces by fans and blown through a horizontal air-duct running lengthwise of the building. At intervals of about 20 ft. staggered outlets are placed, equipped with volume dampers, through which the hot air is distributed throughout the working space. The capacity of the two fans is over 600,000 cu. ft, of warm air per hour. The maximum gas consumption is 1,250 cu. ft. of gas per hour.

A raise in temperature of 20 degrees in one hour was calculated on this job, and the operation during the past few months has proven this raise easily possible.

In the months of December and January the temperature outside the buildings, during the morning hours when the heater was started, ran for days at less than freezing; 24 deg., 25 deg. and 26 deg. were not uncommon figures to note on the temperature reports, and with these conditions the temperature in the building was maintained at the required amount and with a moderate and satisfactory gas bill.

The installation of gas-heating in a factory such as that operated by the California Glove Company cannot but be a great boost to the industry. The company employs about 300 persons. They manufacture all kinds of gloves, from the heavy work glove to a high-class kid. The present United States army glove was designed and made by this firm, and, as a matter of fact, they are at the present writing working on an order for over 100,000 pairs of these gloves.

During the initial period of operating this plant trouble was experienced in some minor points that required frequent adjustments, with the annoyance resulting that was bound to be felt; but during all our efforts the attitude of the glove company's officials was most encouraging, and at the present time we confidently refer to President Raymond as a satisfied gas consumer.

In the manufacture of gloves, especially the sewing and finishing operations, where the hundreds of operators must make every action true, even heat is almost as essential, during the cool season, as light, and the Napa Company officials have considered this in selecting their system.

Various heating appliances could have been installed that would have answered the purpose of furnishing heat for comfort desired for the employees, but it remained for the development of gas—heating with its ease of control—to give not only this comfort, but the evenness of the temperature.

NIGHT AND DAY VIEWS OF THEATRE SHOW PLACING OF LAMPS

Adopt Gas Lamps to Make Moving Picture Theatre Brightest Spot on Chestnut Hill

Manager So Pleased with Result that He Gratuitously Boosts Gas for Lighting on the Screen at Each Night's Performance

The words: "Gas Lights Make this Theatre the Brightest Spot on Chestnut Hill" are thrown on the screen nightly at the Belvidere Theatre in Chestnut Hill, Philadelphia. They are lettered on a slide showing a night photograph of the theatre, illuminated by four 5-burner outdoor gas arc lamps.

Ingenious Arrangements of Lamps for Maintenance, Ignition and Extinguishing.

The manager is not being paid for this advertising of gas lighting, declares *New Business*, issued by the United Gas Improvement Company. He uses it voluntarily because of the great satisfaction he has derived from the installation which was recently completed. The advertising value can hardly be overestimated, as the Belvidere is located near the best residential part in the Germantown District. It is truly the interest center of this neighborhood. Gas lighting has done much to make it so.

Mr. Jacobs, the manager, was particularly desirous of having his theatre patronized by the best class of

people and that was one of his objects in considering an unusual exterior lighting effect. That he has succeeded is shown by the fact that since the lighting was installed the Red Cross and other organizations of high character have selected it as the place to give their benefit performances.

While the lighting effect itself is of great importance, yet of fully as great interest to the gas man are the ingenious arrangements for maintaining the lights, and the ignition and extinguishing control.

The front of the building is colonial in style, a fact which makes it fit peculiarly into the old district in which it is located. For this reason, and bearing in mind the pride which the residents of Chestnut Hill have in their colonial architecture, it was determined to produce a lighting effect which would accentuate and render conspicuous just this feature.

Flood lighting effect was selected because the object was to illuminate brilliantly every detail of the building front, and the contrast with the dark surroundings renders the building much more conspicuous after dark than in the daytime.

There were already three electric brackets in the front of the building supporting lanterns. These, the management did not care to dispense with, not that the light from the units was considered of any importance, but that the brackets themselves were held to be essential to the architectural appearance. Had more brackets been added the artistic effect would have been unbalanced, so it was decided to place the arc lamps on the roof extended out from the building line 18 in.

No Risk to Worker in Getting at Lamps.

The lamps are maintained on a regular incandescent burner maintenance form and in anticipation of this service the precaution was taken to specially construct a swing bracket on which the lamp is turned around on a pivot and brought well in on the roof back of the coping. With the elimination of all danger or risk the lamp may be trimmed with security and turned out to its former position and secured in place.

The swing joint used in each bracket is located at the base of the upright and is connected in the supply pipe that runs horizontally. It permits the arm to swing in either direction or in a complete circle, if desired. This joint was made in the company's Germantown Distribution Shop from a 1½-in. service cock with an iron jacket, the head of the cock plug being drilled out and threaded to accommodate 1¼-in. pipe. The cock plug was drilled in several places to permit gas to flow when the arm is turned at any angle. The horizontal supply pipe, in which the swing joints were placed, extends along the roof at a sufficient height to permit a wrench to be used for the purpose of tightening or releasing the nut head. By releasing the nut head, the swing arm may be lifted out at any time, inasmuch as it is attached to the cock plug.

To prevent friction when the arm is turned and to overcome the possibility of sand blown from the roof entering the ground parts of these joints, a sleeve made from 2-in. iron pipe was slipped over each 1¼-in. upright. The sleeve also adds additional weight to the back of the bracket, which is valuable in that it helps to strengthen the arm.

Ingenious Support Devised

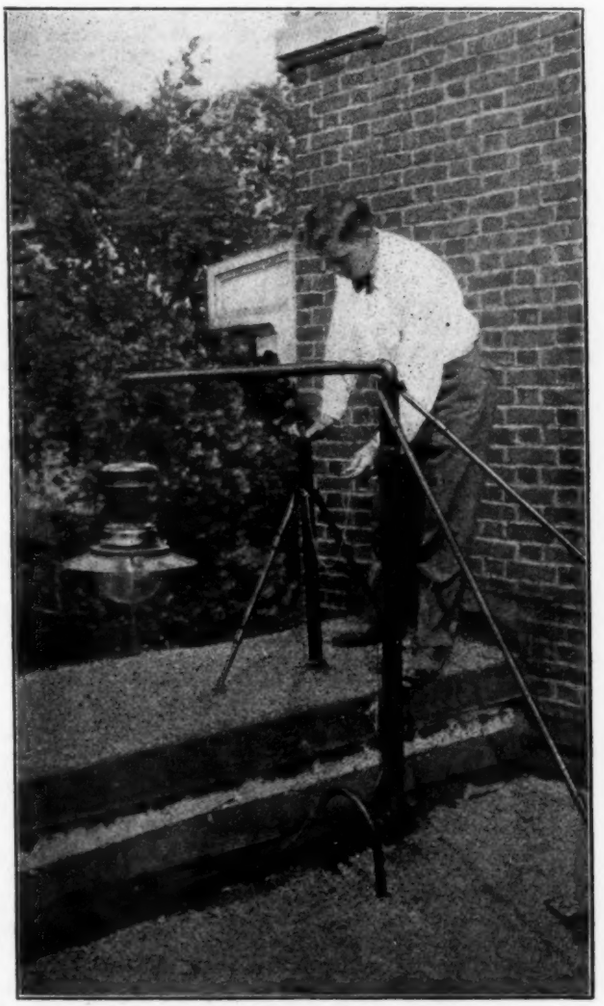
To provide against the swing arms being displaced by wind storms an ingenious support was designed. This is in the form of a brace made from ¾ and 1¼-in. pipe. The smaller pipe is placed inside the larger and works very much like a telescope. It is held in place by a pin extending through both pipes, which can be readily removed so as to release the inner.

The device is placed in an upright position near the edge of the roof and held on both sides by two braces. At the top a tee is fitted, cut so as to receive and hold the horizontal member of the bracket securely in place. This brace is released by the maintenance man when he wishes to swing the arm in either direction.

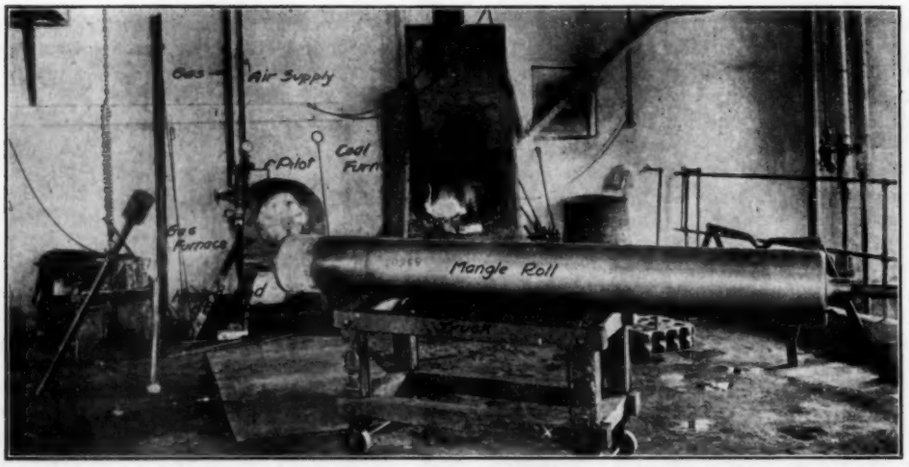
The lighting and extinguishing are accomplished by means of magnet valves controlled by push buttons, located at a convenient point near the manager's office. The new type of valve, known as No. 126 magnet cocks, were secured from the Welsbach Company.

The wiring used is damp-proof and rubber covered, connected to three No. 6 dry batteries. The wires were extended through ¾-in. galvanized pipe to the roof, a half-circle in the pipe above the roof eliminating any possibility of water entering the building throughout the pipe. From this point the wires were extended exposed to the lamps.

The new arc lamps are equipped with the new C-C pilot lighters, manufactured by the Welsbach Company.



SWING BRACKET ENABLES MAINTENANCE MAN TO BRING LAMPS BACK TO ROOF



HEATED END OF 10-IN. MANGLE ROLL JUST OUT OF FURNACE

Redesigned Furnace So Satisfactory that Second Installation is Ordered

S. S. Amdursky Describes Installation Made to Heat Pipe Ends so Gudgeon May Be Permanently Inserted

Several years ago the American Laundry Machinery Company of Rochester, N. Y., installed a gas-fired tube-end heater of standard make to compete with a coal-fired heater. After several tests the consumer decided against the gas heater and it was taken out and stored away. Recently, however, according to S. S. Amdursky, in an article in *Gas and Electric News*, the Rochester Railway and Light Company redesigned and tested the gas-fired heater in its own shops and feeling confident of the results, arrangements were made to install the furnace at the consumer's premises for test. The results proved so satisfactory that a second furnace was immediately ordered.

Used to Heat Pipe Ends

The furnace is used to heat the ends of wrought iron pipe to a temperature of about 1,200 deg. Fahr. over 8 in. of length at either end in order that a gudgeon which consists of cast iron plug having a bearing end, may be driven in while the pipe is hot. When the pipe cools it contracts on the gudgeon and makes a tight shrink-fit.

The pipe sizes vary from 2 in. up to and including 11 in. in diameter. The pipe to be heated is carried from the store yards on a truck and is transferred to a portable table (the table is set on rollers which are guided to the furnace by tracks) which is so constructed that the pipe may be revolved on its axis while it is being heated. After a gudgeon is driven into one end, the ends are interchanged and the second end is heated.

The construction of the furnace which is shown in the accompanying diagram consists of a cylindrically shaped lining of refractory material "A" made up of arch bricks. The lining is covered with sheet iron "B," and the ends of the furnace are protected by the iron plates "C." The front plate "C" is provided with an opening large enough to accommodate the largest size pipe to be heated. It is also provided with pins "D" to receive the reducing collars "E" which enable smaller sizes of pipe to be heated with equally good results.

The burner "G" is constructed of an ordinary piece of pipe drilled and tapped to receive the screened burner tips "H," which are arranged spirally to give an even distribution of the heat. As shown, a covering of asbestos cement "J" is placed between the burner tips and over the pipe. The heat is confined to the end of the pipe being heated by plugging the opposite end of the pipe. The direction of the heat travel is shown by the arrows. The furnace proper is supported on cast-iron legs.

The necessity and importance of the proper design is shown by the fact that after the furnace was designed the gas consumption was cut in half, while the time per heat was reduced to less than half of what it was with the original furnace design, thereby getting more than double the amount of work done with half the amount of gas consumed.

One of the disadvantages of a coal furnace for this work is that while the bottom side of the pipe is being heated the upper side cools down, with the result that a considerable amount of scaling and pitting appears on the outside surface of the heated end.

Due to this non-uniform heat excessive internal strains are set up in the pipe ends. With the gas furnace three times the number of heats may be made in the same length of time. This means that production is thereby tripled and a considerable saving is effected due to the fact that it takes several men to handle the larger-sized pipe.

With the coal heater it was necessary for these men to wait a considerable length of time until the ends were heated, whereas the speed of the gas furnace is such that the heating process is continuous.

The product is also of much better quality due to the uniform heat, and scaling, if any, is on the inside rather than on the outside of the pipe.

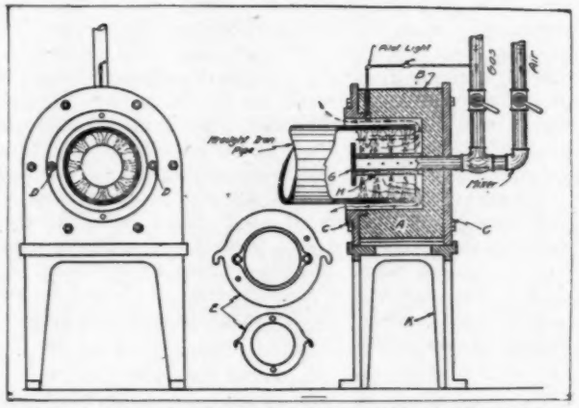
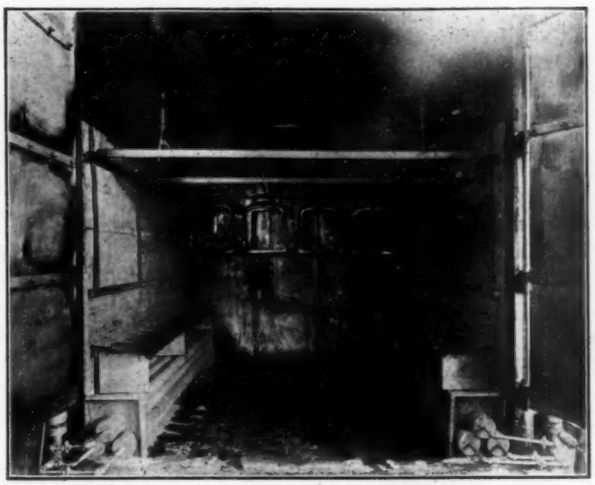


DIAGRAM OF FURNACE ILLUSTRATING REDESIGNED BURNER



INTERIOR OF OVEN SHOWING RADIATOR PARTS BEING DRIED

Automobile Radiator Japanning Oven Installation Possesses Novel Features

Combustion-Products Circulating Radiators Made by a Cluster of Three 5-In. and Five 3-In. Pipes—Two-Inch Blast Burner in One End of Each of the Large Tubes Supplied with Self Sustaining Mixture

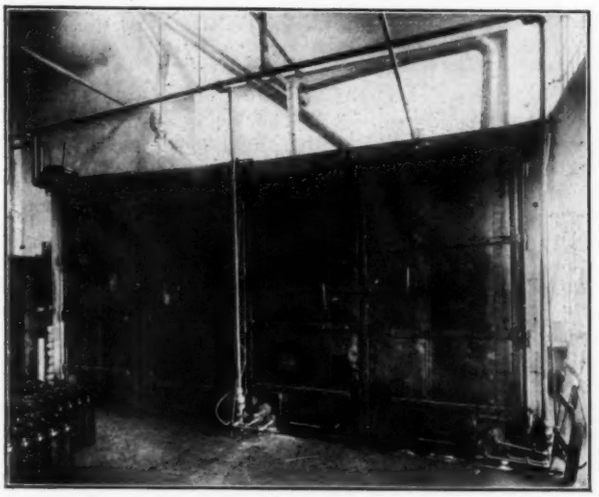
An industrial gas installation which possesses novel and interesting features has been installed in the plant of the Long Manufacturing Company, Detroit, Mich., by the C. M. Kemp Manufacturing Company. This consists of radiators of the combustion-products circulating type, each made of a cluster of three 5-in. and five 3-in. pipes, as shown in the accompanying illustration, terminating in rectangular boxes at each end. In one end of the 5-in. tubes there is a 2-in. blast burner supplied by a self-sustaining mixture. The gas is forced through this burner under a pound pressure and produces a flame of about 8-in. in length. The combustion products promptly expel the air in the radiators, and by the force of the flame blast and the expansion caused by combustion, the products are forced to travel in one direction through the 5-in. tubes returning through the 3-in. tubes and circulating very rapidly so that the radiators are heated uniformly throughout their length.

Excess Combustion Products

The excess combustion products caused by the continued combustion of the fuel, exhaust from the rectangular boxes at each end into a false sheet metal wall or flue, finding exit from the top of the flue through the cylindrical pipe passing through the roof of the oven. There are horizontal partitions in the false walls which make 52½ ft. of flue travel for each radiator, having an area of 1 x 8 in.

It has been found by test that the oven when loaded with automobile parts is heated to a temperature of 425 deg. The enamel is uniformly baked on work taken from all parts of the oven. The temperature of the existing gases as they pass through the roof of the oven is found to be 18 deg. lower than the temperature of the inside of the oven.

The factory has been in operation day and night since the machine was installed. Though it has been impossible to get a separate gas reading on the oven it is evident that the gas consumption is much less than by the former method of heating, by which the gas was burned in a sheet metal box and the products escaped into the false walls or partitions, and with which method the escaping flue gases were at a very much higher temperature than at the center of the oven.



EXTERIOR OF FURNACE

The drawing reproduced herewith is of a smaller combustion-products radiator than that used in the in-

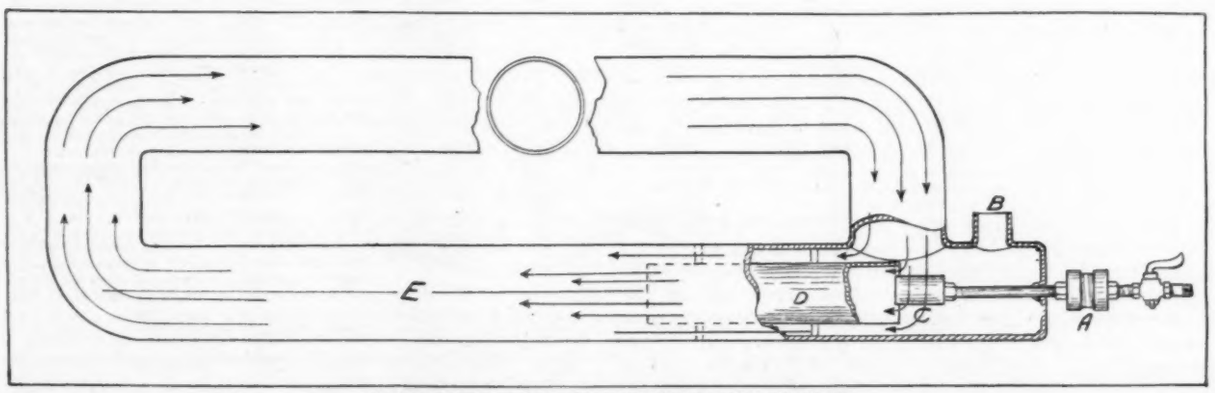


DIAGRAM ILLUSTRATES WORKINGS OF RADIATORS

stallation in question, but it shows clearly the principle involved. In this radiator the combustion products, which are in rapid circulation, fill a tube 8 in. in diameter, while the exhaust port is 2 in. in diameter and more than ample to take care of all the excess or exhausting combustion products.

The flame blasted from the end of the burner "C" into the tube "D" creates a suction which entrains the combustion products into the burner end of the tube "D." A secondary suction occurs between the left-hand end of the tube "D" and the wall of the radiator.

The gases travel with considerable velocity, and, as the air and gas mixture requires no outside supporter of combusion, the flame burns as well in this enclosed chamber as it would in the open.

No Involuntary Shut-Down Occurs in Two Years in Power Station Run on Coke Oven Gas

Three Gas Engines Run for an Average of 16 Hours Per Day, Two of Them Being Capable of Dealing with the Night Load

The fact was brought out at a recent meeting of the Midland Section of the British Coke Oven Managers' Association that the British Westinghouse Company, Ltd., has been running a district power station on coke oven gas for a number of years.

The coke ovens were supplied by the Otto Company, the station itself being supplied by the British Westinghouse Company, consisting originally of two 500 British hp. four-crank, eight-cylinder, vertical gas engines direct coupled to three-phase, 50-periods, 440-volt alternators. The machines are capable of giving the stated outputs continuously, with a 10 per cent overload for short periods. The alternators are each of 350 kw.—*i. e.*, 466 kva.—at 0.75 power factor. These were set to work towards the end of 1912 and the beginning of 1913, respectively, and are complete with all usual accessories.

Towards the end of 1913 a third and exact duplicate was installed, and at the present time a fourth unit of rather larger capacity is being put down.

Expectation of Reduction in Costs Per Unit.

This last unit is of a slightly improved form, embodying the latest practice in engines of this type, and consisting of a unit having a capacity of 670 British hp. direct coupled to an alternator of 450 kw. (560 kva.); otherwise as before. This new unit is also a four-crank, eight-cylinder engine, and, like the smaller units, has a speed of 300 r.p.m. The total capacity of the station is therefore 2,170 British hp. This new unit will shortly be started up, and it is anticipated that the costs per unit will be still further reduced. At present all three gas engines run for about sixteen hours per day, two engines being capable of dealing with the night load and one engine with the week-end load.

No Involuntary Shut Down in Two Years

During the last two years there has been no involuntary shut-down of the plant and no stoppage of the colliery or coke oven equipment due to any defects in the gas engine station. The highest observed load is very nearly equal to the full normal output of the three units; and at the present time the average load, and therefore the load factor, is even better than as indicated by the figures for 1916. This success is largely attributed to the great care which is taken by the engineer to keep the plant in perfect running order at all times, and to the co-operation which takes place between the engineer and the chief chemist so as to ensure the gas supplied to the engines being of suitable quality and pressure at all times. The figures for 1916, given month by month, are as per the accompanying table, in which column A represents the total units generated during the period, column B the load factor, column C the gas in cubic feet per hour consumed by the engines and column D the highest observed load during the month.

	A.	B.	C.	D.	E.
January	242,010	39 %	16,458	800	.13d.
February	281,100	52 %	20,215	900	.12d.
March	364,510	42 %	28,468	1,000	.11d.
April	337,390	60 %	26,700	770	.13d.
May	326,780	43 %	23,317	1,000	.14d.
June	381,660	50 %	24,500	1,050	.11d.
July	385,700	52 %	24,503	1,030	.102d.
August	364,440	46 %	22,916	1,050	.13d.
September	322,510	48 %	19,633	900	.14d.
October	375,020	50 %	21,958	1,000	.12d.
November	387,310	48 %	25,152	1,100	.12d.
December	388,320	48 %	23,098	1,080	.14d.

Government Official Urges Public to Use Gas for Light, Heat or Power Wherever Possible

In a recent proclamation to the public the British Minister of Munitions recommends that: "In view of the paramount importance of meeting the increasing need for by-products obtained from the carbonization of coal at gasworks, the Minister of Munitions wishes to impress upon those possessing gas-burning appliances the desirability of using gas in preference to any other means of obtaining *light heat or power*. At present an increased supply of gas can be provided without difficulty, inasmuch as during the summer months gas undertakings generally are in a position to manufacture in excess of the ordinary requirements of consumers."

Establish Aerial Postal Service Between Continental Italy and Islands of Sicily and Sardinia

A regular postal service by the air route has just been established between continental Italy and the islands of Sicily and Sardinia. The first was inaugurated on June 24 between Naples and Palermo, and the other from Civita Vecchia, on the mainland, to Terranuova-Pausania (Sardinia), three days later.

The first trip from Naples to Palermo was made by a seaplane, at a speed of 140 kilometers per hour (87 English miles), flying at an altitude of 1,500 meters to 2,000 meters (5,000 and 6,000 ft.) above sea level, which reached Palermo in less than 2½ hours.

A heavy mail, consisting of letters and newspapers from all parts of Italy, directed to all the principal towns in the island, was carried.

The machine was manned by a pilot and a motor driver.

The service from Civita Vecchia to Sardinia was successfully opened on June 27 by two seaplanes, each carrying 100 kilogs (about 2 cwt.) of mail in watertight bags. The crew of each machine consisted of a pilot and a motor driver.

Patents Pertinent to the Gas Industry

Set Screw Prevents Turning of Cock

Patent No. 1,221,771; described in Patent Office *Gazette*, April 3, 1917, page 266. Louis K. Schwall, Chicago, Ill. Filed March 29, 1915. Serial No. 17,696. (Cl. 137-7.)

The gas cock is prevented from turning in the manifold by a set screw which passes through a lug on the cock and engages the manifold.

Pipe Joint Provided with Self Tightening Ball and Socket

Patent No. 1,223,645; described in Patent Office *Gazette*, April 24, 1917, page 1027. Theodore C. Van Epps, Los Angeles, Cal. Filed Sept. 21, 1916. Serial No. 121,415. (Cl. 127-88.)

Of a two-part socket member, one part is attached to a pipe. Inside of the socket is a ball member, which is composed of a central sleeve provided with a laterally extending disc. A pair of compressible packing rings surround the sleeve, one on each side of the disc. A pair of centrally bored packing compressing rings telescope with the outer face of one end of the sleeve, and freely slide in a longitudinal manner to tighten the packing rings.

Acetylene Generator Equipped with Spring

Patent No. 1,223,294; described in Patent Office, *Gazette*, April 17, 1917, page 869. Edwin M. Rosenbluth, Philadelphia, Pa. Filed Sept. 18, 1913. Serial No. 790,396. (Cl. 48-4.)

This generator consists of a casing which contains the carbide and the water container fastened above the carbide. The carbide is forced down and into the generating chamber by the action of an annular bowl with a central outlet which is actuated by a spring.

Tar Mixed with Gas, Steam and Air in This Tar Burner

Patent No. 1,223,011; described in Patent Office *Gazette*, April 17, 1917, page 775. Carl A. Wendell, Joliet, Ill. Filed Oct. 21, 1916. Serial No. 127,005. (Cl. 158-74.)

This method of burning tar consists in mixing combustible gas, steam, and air in proper proportions in a jacket. The mixture is ejected from the jacket with a whirling motion. The tar is carried in a pipe through the jacket and is sprayed from the end of the pipe by flattening the end of the pipe. The tar is atomized and discharged into the whirling body of burning gas.

Resuscitation Chart Issued by Bureau of Mines

The Bureau of Mines has just issued a chart on the subject of resuscitation from gas asphyxiation, drowning, and electric shock, a copy of which is reproduced herewith. This chart is suitable for posting at the mines, in police and fire stations, bathing houses, and all industrial establishments in which there is danger from gas asphyxiation, drowning, or electric shock.

It shows the Schaefer, or prone, pressure method of artificial respiration, which is the latest and most approved method advocated by eminent physiologists of the country.

The bureau is issuing this chart in the hope of inducing the adoption of this standard method of resuscitation throughout the country and with the hope that the instructions presented on the chart may result in the saving of human life.

Copies of this chart will be sent free of charge to all persons requesting it as long as the edition remains in stock.

DEPARTMENT OF THE INTERIOR
FRANKLIN K. LANE, Secretary
BUREAU OF MINES
VAN H. MANNING, Director

RESUSCITATION

COMPILED BY DR. YANDELL HENDERSON

FROM GAS ASPHYXIATION, DROWNING, AND ELECTRIC SHOCK

GAS ASPHYXIATION.—Remove the victim from the poisonous atmosphere. If he is still breathing, administer oxygen from a tank with a bag and mask for 20 minutes. If he is not breathing and his jaws are locked so as to interfere with effective artificial respiration, pry them open and wedge with a piece of wood, and remove any foreign body from his mouth. Then give artificial respiration as shown below.

DROWNING.—As soon as the victim is taken from the water place him face downward, clasp your hands under his stomach, and lift him several times, letting his face hang down so as to drain his mouth and throat. Remove from his mouth any foreign body (tobacco, false teeth, or gum). Do not stop to loosen his clothing. Do not carry him any distance. Do not wait for a doctor. Treat him yourself as shown below.

ELECTRIC SHOCK.—With a single quick motion free the victim from the current. Use any *dry* nonconductor (clothing, rope, board) to move either the victim or the wire. Don't take hold of the live wire, and beware of using metal or any moist material. Send someone to shut off the current. If the victim is not breathing remove from his mouth any foreign body. Then give artificial respiration as shown below.

Begin Artificial Respiration at Once.

Lay the victim on his belly with his face to one side so that his nose and mouth are free for breathing. Place the victim's arms and hands exactly as shown in figs. 1 and 2, one arm straight out beyond his head, the other under his head. This position is important as it helps to expand his lungs. In drowning cases have the head a little lower than the body.

Kneel, straddling the victim's thighs and facing his head; rest the palms of your hands on his loins (on the muscles of the small of his back), with your thumbs nearly touching each other and with fingers spread over his lowest ribs (see fig. 1).

With arms held straight, swing forward slowly so that the weight of your body is gradually, but *not violently*, brought to bear upon the victim (see fig. 2). This act should take about two seconds.

Then, leaving your hands in place, swing backward slowly so as to remove the pressure, thus returning for two seconds to the position shown in figure 1.

Repeat deliberately 16 to 20 times a minute the swinging forward and backward—a complete respiration in about four seconds. Keep the movements in time with your own breathing.

Figure 1.

Figure 2.

Every Moment of Delay is Serious.

While the artificial respiration is being continued, have an assistant draw forward the victim's tongue, if it has fallen back (fortunately it usually falls forward when the victim is face down). Hold the tongue out if it tends to draw back, by wrapping a handkerchief around it. The handkerchief may also protect the assistant's fingers from being bitten. The assistant should also loosen any tight clothing around the victim's neck, chest, or waist.

Do not permit bystanders to crowd about and shut off fresh air. Keep the victim warm with proper coverings and by placing beside his body hot bricks, bottles, or rubber bags filled with warm (not hot) water. Wrap bricks, bottles, or bags so as to prevent burning the victim.

Continue the artificial respiration *without interruption* until natural breathing is restored, or for at least three hours. If natural breathing stops after being restored, use artificial respiration again.

Do not give any liquid by mouth until the victim is fully conscious. Keep the victim flat. If after being partly resuscitated he must be moved, carry him on a stretcher. It is dangerous to make an ill person, or one injured in any way, sit up or stand. To make him walk may cause his death.

This chart shows the Schaefer, or prone pressure, method of artificial respiration, as adopted by the Committees on Resuscitation from Mine Gases and Electric Shock, which were appointed by the United States Bureau of Mines, the National Electric Light Association, the American Institute of Electrical Engineers, and the American Medical Association. These committees included Prof. W. B. Cannon, Prof. Yandell Henderson, Prof. Joseph Erlanger, Dr. George W. Crile, Dr. S. J. Meltzer, Dr. R. A. Gesell, Mr. W. C. L. Eglin, Dr. E. A. Kennelly, Mr. W. D. Weaver, and Dr. Elihu Thomson.

Copies of this chart may be obtained on application to the Director of the Bureau of Mines, Washington, D. C.

Don't Wait For an Accident. Learn How to Revive Your Partner by Practicing on Him Now, and Let Him Practice on You.

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Wage Standards in the Industrial Fuel Field

An unattached specialist in industrial fuel gas responded to a distress call from a company which was dissatisfied with the results its own industrial department was securing. He remained with the company for a period numbered by days and in that time, besides remedying shortcomings in existing installations and preventing the loss of business in several cases, added 6,000,000 cu. ft. in new business.

The company was so pleased with his success that it sought to secure his services permanently. He inquired as to the salary it would pay. The answer was $300 a month.

The AMERICAN GAS ENGINEERING JOURNAL has had occasion several times in the recent past to express its views in regard to rates of compensation for industrial gas men. Its contention has been and is, that until the industry accepts it as an established fact that the compensation for these men be measured not by any previous standard, but by the results they may and do attain, it can never hope to reap even a fair share of the opportunities that lie in the industrial field.

The sum offered this man who obtained $6,000 worth of new business in a very few years might make the eyes of some clerk glitter, and might appeal strongly to some plodder of mechanical turn of mind, but for a pusher with big things constantly before his mind's eye, it is nothing.

When will we awake to a full realization of such obvious facts? Soon, let us hope, for we are in the heyday of opportunities in the industrial gas branch. The proportion of them we will harvest depends wholly upon the promptitude with which we readjust our views to the conditions of the present.

The Gas-for-House-Heating Situation

We are fast approaching the house-heating season. Never before have we faced this period with such bright prospects. Even as late as last season the gas-heating salesman thought he was bold enough if he merely mentioned auxiliary heating. This season many —and they are not confined to Baltimore alone—are setting their eyes on complete installations.

An extraordinary coal situation has made such prospects feasible. There are those who look upon them as of doubtful value, being skeptical as to their being permanent customers. Some even doubt if they are being honest with their clients in advocating complete installation, knowing full well that in time the coal situation will be relieved.

Speaking from the viewpoint of broader economics, the man who heats his house exclusively with gas is a good citizen, not only in war times, but in peace times as well. Reduced to the narrow viewpoint of comparative fuel costs alone, it is equally certain that he pays a premium for his public spiritedness and sense of responsibility to future generations. If he does not attend to his own furnaces, however, and pays for the removal of his ashes, the premium is reduced. Taking a long-sighted viewpoint it is quite likely that, in the long run, insofar as it effects him and his immediate

issue, it is likely that he would make money by the change.

No one, so far as we know, has gotten down to very fine points in determining the difference in cost per thousand cubic feet of gas in serving the small and the medium consumer. Let every consumer who now uses gas merely for lighting or for cooking, heating water for laundry purposes, or for all three, add to his consumption the quantities needed to do all his house heating and water heating, and we are certain there will be an appreciable reduction in the cost of serving each consumer to the gas company. This can mean only one thing—reduced rates to the consumer. Then will banish the bugaboo of relative fuel costs, even when figuring on the narrow basis of primary costs alone.

The AMERICAN GAS ENGINEERING JOURNAL does not concur with these pessimists in regard to the permanency of complete house-heating installations secured on the basis of existing conditions. Gas for house heating has become a vast commercial actuality. Under normal conditions it was advancing in importance by great strides. Existing conditions have afforded an opportunity for it to hurry its momentum by at least one huge leap.

It is to be hoped that the companies will not fail to reap the full harvest due to an oversight. It would be pitiable indeed if our sales were curtailed due to an inability to obtain the heaters.

Things They Tell Each Other When They Happen to Meet

When a group of gas men engaged in similar lines of work, be it lighting, industrial fuel, distribution or what not, happens to get together the greater part of the time is spent in talking shop. Each realizes when the group breaks up that he knows more about his particular branch of the business than he did when it gathered, and that he has received new ideas which he will shortly utilize in his own endeavors. The value of these gatherings to the gas industry is great. But they are too infrequent at the best, and even if the groups are unusually large the information imparted is disseminated over but a small part of the industry.

The same ideas, suggestions and experiences that are verbally transmitted in such gatherings can be better transmitted through the medium of the gas journal. It is no more difficult to write than it is to talk—in many cases less so, once one has acquired the habit—and the mental schooling received in acquiring this habit is invaluable.

The service instinct is strong in all of us. What one gas man has learned, it will be found, he is only too willing to impart to others. The gas journal with its frequency of publication affords him the readiest means of reaching the largest audience.

It will be conceded that the gas man of the past has not made the maximum use of his journal. Recent times have seen to an extent a reversal of this neglect. The future will reveal a complete reversal, for until this occurs the industry can never attain its maximum rate of development.

That Dead Issue—Gas Lighting

From a manufacturer of gas-lighting appliances and equipment comes a curious plaint. He is hesitant in sending us some information in regard to a recent innovation lest its publication attract more business. "We are oversold," he protests.

Can this be the same gas lighting that so many self-constituted authorities have assured us is a dead issue? And can it be that the particular lamp the manufacturer is oversold on is not some dingy little 50-cent complete outfit for installation in cellars and other inconspicuous places, but a massive affair whose only possible market is for the lighting of large areas; public buildings, department stores, churches, etc.—show places of the community?

We vaguely recall articles in the AMERICAN GAS ENGINEERING JOURNAL which told us of gas lamps displacing electric lights on the boardwalk of a foremost ocean resort, of electric wires being ripped out of a city department store to make way for gas pipes for lighting, of churches, libraries, etc., taking similar action. In our editorial innocence we speculated in these columns whether the community at large was not beginning to realize that the eyes, after all, are the most important factor in artificial illumination; that fads and fancies are very well in a way, as dispellers of boredom, but they must go by the board when purchased at the cost of injury to organs that cannot be repaired. The solons assured us that these were isolated instances; that anything is apt to happen *once*.

But this protest from a manufacturer of exceedingly large capitalization, whose entire business is in gas lighting equipment, that his is oversold, gives us renewed confidence in our speculations. Can it be that we have over-evaluated the dictum of the authorities?

Little Differences Between Our Contemporaries

Youth is indulgent, age exacting. The first sees through the shams, pretense, hypocrisies and pompous paradings of life, smiles and forgets them. Age, being less patient, waxes wroth.

Our New York contemporary is somewhat exercised because the gas periodical published in Chicago somewhat recklessly, in a belated effort to approve the course of the National gas associations in postponing their conventions, condemns those who think otherwise as being rather poor sort of patriots; thus, the Eastern journal aptly points out, placing in that opprobrious category the managements of the Illinois, Pennsylvania, New Jersey, Southern, Southwestern, Natural Gas, Natural Gas Supply Men, Canadian, Empire State, Indiana, Missouri, Pacific Coast, Texas, Kansas, Wisconsin and similar gas associations.

"Patriotism" makes very good copy, but mock patriotism used as a cloak to conceal a quest for commercial advantages disgusts. Most of us are rather touchy at present in regard to the degree in which we are considered patriotic. Those who take it upon themselves to call into question this or that man's patriotism should think well before they speak.

Writing entirely from a non-partisan viewpoint, we think the Chicago paper has been somewhat too free and flippant with regard to the terms "patriotism" and "patriotic." We recollect that some time ago it hailed with rapt exultation in its editorial columns the "patriotism" of a manufacturer who has put on the market a burner, which it was claimed—and doubtless with perfect truthfulness—effects great savings in gas consumption in industrial tasks. As a matter of fact, war or no war, this appliance would have been placed on the market and pushed by advertising. People with meritorious devices which are assured of a ready market do not have to be impelled by patriotism to place them on sale.

The impelling motive in most cases where a journal becomes forgetful of the fact that its first duty is to the subscriber and runs in the pages that rightfully belong to him "write-ups" and "puffs" of a commercial product, is of course the desire to obtain or retain advertising revenue from that manufacturer. Every journalist knows this, and all journalists of sound business judgment in the trade journal field realize that the periodical which succumbs to this temptation is paving the way to its own undoing.

The AMERICAN GAS ENGINEERING JOURNAL has consistently indorsed the action of the two National gas associations in postponing their conventions. Incidentally, it took this stand weeks before any other journal, and in the face of the fact that it was going contrary to the sentiment of several of its advertisers, its representative having reported from the Natural Gas Association convention at Buffalo that manufacturers gathered there were greatly exercised over the National Gas Association's action.

But the AMERICAN GAS ENGINEERING JOURNAL has never seen fit to criticize the action of those associations which have decided to hold their meetings as usual. Its attitude has been that the respective managements knew their own situations best.

What is food to man might be poison to some other animal. The same law applies to the gas associations. The advantages to be gained by holding a convention in war-time on one situation might so far outweigh the disadvantages as to make such a course not only desirable, but imperative, and vice versa.

A Seller's Market

Conditions due to the war have brought about a complete reversal in the relations of the buyer to the seller. Instead of the former specifying to the smallest detail the article he would take, dictating the terms of the contract, and to a marked extent determining the price, we daily have before us the unusual spectacle of the seller laying down the law as to what quantities he would agree to furnish in a given time—usually less than the buyer wants—dictating all terms and conditions and generally assuming a "take it or leave it" attitude, with a very evident inference that he would prefer that the buyer accept the second alternative. The situation as to labor and materials is such in many cases that the manufacturer—generally vainly—seeks to curtail his sales rather than increase them.

Is there not in this condition great possibilities for the future welfare of the gas industry?

We know that numerous modifications are made to so-called standard gas-using appliances by perhaps the majority of manufacturers to meet the whim of this or that community. Too frequently these modifications mean nothing one way or the other in the efficiency or appearance of the appliance. The motive behind the demand for the variations is very similar to that actuating the man with perfectly normal and average feet who feels prompted to have his shoes individually made to order. In each case the result is an unnecessary waste of human labor.

But we also know that as long as their whims were catered to, the farmers of Ohio persisted in using left-handed plows when the farmers of the country at large were, in a mass, users of right-handed plows. Now, these Ohio farmers are buying right-handed plows because the seller in his reversed relationship has refused to manufacture the odd variety. Hence, a saving in steel has been effected and a great amount of waste in human labor eliminated.

Further, we know that the waste due to the liberal return privilege allowed retailers by manufacturers of garments, shoes, etc., amounted in years past to hundreds of millions of dollars. This form of waste, too, is becoming a matter of history, due to the fact of the seller's market.

The opportunity for manufacturers of gas-using appliances to effect a reform in buying conditions is unparalleled in the history of the industry. For years they have argued, pleaded and even begged our purchasing departments to buy on a reasonable and economical basis; to permit of standardization in its true sense, and thus pave the way to an economy beyond estimate, and increased prosperity to the industry; but have accomplished little. The time has come when they can enforce these wishes, which we, in the abstract, conceded to be reasonable. Will they avail themselves of the opportunity? The unfolding of events as they occur only can furnish the answer.

Big Days Ahead for the Engineer

Nobody knows how long this war is going to last, but we do know that when the war is over the rehabilitation of a stricken, if not paralyzed civilization, is going to be a long-drawn-out and uphill task and there will be need on every hand for trained minds, for trained and schooled men. The day of the engineer will be indeed the big day.—*Secretary of War Baker,* in a recent address.

Publications

The Proceedings of the Illinois Gas Association—1916

Cloth bound; 309 pages; illustrated. Published by the Illinois Gas Association, Horace H. Clark, secretary.

Includes report of board of directors, names of new members elected, president's address, reports of committee, names of new officers, membership lists, etc.

Among the papers published are: "The Gas and Coal Range; Is It a Step Forward or Backward?" by H. L. Dunavan; "Some Results Obtained in Testing Domestic Gas Ovens," by W. C. Buttner; "Fundamental Features of a Sound Public Utility Bond,," by F. K. Shrader; "Strengthening and Completing State Regulation in Illinois," by Paul Bird; "Engineering Work in Connection With Rate Cases," by A. S. B. Little; "Welding Steel Mains," by E. E. Lungren; "Gas Service in Illinois," by S. P. Farwell; "The Relation of the

Bureau of Standards to the Gas Industry," by R. S. McBride; "Industrial Gas Equipment," by F. F. Cauley, and "Results Obtained on Various Gas Coals," by E. H. Taylor.

Limits of Complete Inflammability of Mixtures of Mine Gas and of Industrial Gas with Air

Technical paper 150, issued by U. S. Bureau of Mines, Washington, D. C., Van H. Manning, director. Authors, George A. Burrell and Alfred W. Ganger. Booklet; 13 pages; illustrated; paper backed.

A report summarizing the results of numerous experiments to determine the limits of inflammability of mixtures of mine gas and *industrial gases* with air. The most important results of the experiments are shown in a chart which is reproduced herewith. The gases in-

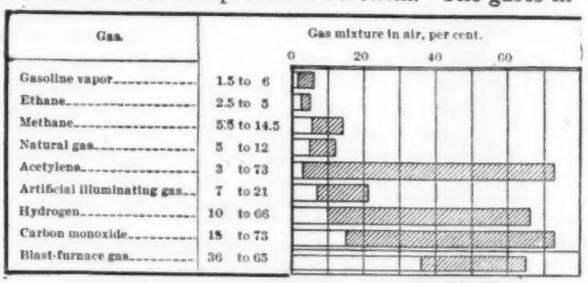


CHART SHOWING RESULTS OF EXPERIMENTS

vestigated were: Gasoline vapor, ethane, methane, natural gas, acetylene, manufactured illuminating gas, hydrogen, carbon monoxide and blast furnace gas. Vast quantities of gasoline vapor, natural gas, acetylene, artificial illuminating gas, blast-furnace gas and hydrogen, the work points out, are being utilized for industrial purposes. Methane, hydrogen and carbon monoxide are found in mines. Methane and ethane are constituents of natural gas.

In all of the experiments the explosion chamber was large enough so that its cold walls exerted no appreciable effect on the results. In spite of the slightly different results one can obtain under different conditions of experimenting, it is believed that the values for explosive limits given are close enough to be of decided commercial importance.

The results were obtained with gas mixtures kept at atmospheric pressure. The authors found that with mixtures of methane and air and of gasoline vapor and air, raising the initial pressure to 6 atmospheres had no appreciable effect in changing the limits of complete inflammation, although the explosion, when it came was of greater violence. As regards the effect of temperatures, raising the initial temperature from ordinary room temperature to as high as 200 deg. C. only shifts the low limit for methane from 5.5 to about 5.05 per cent. Presumably increases of temperature and pressure affect to about the same degree the other gases mentioned in this report.

At present oxygen is used in increasing quantities for industrial purposes, hence the limits of inflammability of mixtures of gases with oxygen are of interest.

As regards methane-oxygen mixtures it was found that the low limit was raised about 0.25 per cent when pure oxygen was used instead of air. The high limit was, however, extended from 14.5 to 45 per cent methane, the explanation being as follows: In a methane-air mixture containing 9.47 per cent of methane and 90.53 per cent of air there is enough oxygen for complete combustion of the methane to carbon dioxide and water vapor. But if more methane is present, carbon monoxide and hydrogen, products of incomplete combustion, result. This reaction takes oxygen that would otherwise form carbon dioxide and water vapor. Some heat is produced, but much more heat is produced in the formation of carbon dioxide and water. As the percentage of methane is increased above 9.47 per cent, more and more carbon monoxide and hydrogen are formed from combustion until so much is formed that not enough heat is produced by ignition of the gas molecules adjacent to the igniter to cause the mixture to propagate flame. As air is only about one-fifth oxygen, substituting oxygen for an equal volume of air greatly increases the proportion of oxygen available for burning the combustible gas, the gas burns to water vapor and carbon dioxide, the heat of combustion is greater, and the upper limit of propagation becomes higher.

Presumably the upper limits for other gases would also be extended if oxygen were used instead of air. However, the low limits are the important ones as regards danger of accidental explosions, and these are seemingly not much affected.

The values for explosive limits given in this report refer to mixtures of the combustible gases with nearly pure air having a normal oxygen content. However, the oxygen content has to fall considerably before the limits of complete inflammability are appreciably changed. For instance, for mixtures of methane and air the low limit is given as 5.5 per cent of methane, which is the limit when the oxygen content varies between 17 and 21 per cent. With 17 per cent of oxygen in the mixture, the limit is raised to 5.7 per cent of methane. The oxygen content has to fall below 14 per cent to prevent all explosions in mixtures of methane and air. Replacing the nitrogen of the air with 20 per cent carbon dioxide raises the limit to 6.4 per cent methane. Raising the pressure of a gas mixture above atmospheric has no appreciable effect in changing the explosive range.

The authors compressed mixtures of hydrogen and oxygen in a steel bomb to 100 atmospheres before ignition and found that the explosive range was only a trifle different than the range at atmospheric pressure. The low limit was raised about 1 per cent.

By-Product Coking

Author, the late G. Stanley Cooper. Cloth bound; 174 pages; illustrated. Published by Benn Brothers, Ltd., 8, Bouverie Street, London, E. C. 4, England. Price, 7 shillings 6 pence net.

An exceedingly useful and well prepared work on a subject upon which there is an insufficiency of available literature. Though written from the English point of view, the author manifests an exceptional familiarity with foreign practices, and especially marks the differences with American practice.

Previous to completing the work, Mr. Cooper died, Dec. 15, 1916, leaving the concluding chapter unwritten. He had, however, already indicated that it was intended to deal with probable future developments of the industry, and, in particular, with the possibility of a vertical coke oven. With this general indication as a guide, C. P. Finn, manager of the Hemsworth By-Product Coke Ovens of the South Kirkby, Featherstone and Hemsworth Colleries, Ltd., prepared the chapter.

The work includes also chapters on the importance of the coking industry; the nature and preparation of cok-

ing coals; the development of the by-product oven; the working of a by-product coking plant; systems of coke ovens, including Coppee, Otto, Simon-Carves, Koppers, Collin, Huessener, Semet-Solvay, Simplex, B. C O. and B. M.; coal and coke handling machinery and gas exhausters; the recovery of tar and ammonia; the recovery of benzol; the utilization of surplus coke oven gas; tar distillation, and chemical tests.

The Determination of Nitrogen in Substances Used in Explosives

Technical paper 160 of the U. S. Bureau of Mines, Van H. Manning, director. Authors, W. C. Cope and Guy B. Taylor. Paper-backed booklet; 46 pages; illustrated. Obtainable from Superintendent of Documents, Government Printing Office, Washington, D. C. Price 10 cents.

Contents include discussion on: Dumas method for nitrogen determinations; the modified Kjeldahl method; the phosphorus iodide method; results by the three methods; determination of nitrogen in nitrates, and useful tables for nitrogen determinations.

Coal Mine Fatalities in the United States for May, 1917

Paper-bound booklet; 28 pages; illustrated. Issued by the U. S. Bureau of Mines, Van H. Manning, Washington, D. C., director. Statistics compiled by Albert H. Fay.

Contents include: Causes of coal-mine fatalities in 1917, by States and months; details relating to chief causes of accidents; principal coal-mine disasters; miners' circulars in foreign languages; inspectors' cooperation; vegetable gardens at mines; approved permissible explosives, lamps and mining equipment and publications on accident statistics.

Preparation of Ferro-Uranium

Technical paper 177, issued by the U. S. Bureau of Mines, Van H. Manning, Washington, D. C., director. Authors, H. W. Sillett and E. L. Mack. Paper bound; 43 pages; illustrated.

As part of the investigations of the Bureau of Mines relating to radium, uranium, and vanadium, a laboratory study of the preparation of ferro-uranium has been made. The results of the study are presented in this report in the belief that they will be of aid in developing the use of ferro-uranium, particularly in the manufacture of special steels.

Gas Calorimeter Tables

Circular 65, issued by the U. S. Bureau of Standards, Washington, D. C. Paper bound; 19 pages; illustrated.

This circular may be regarded as a supplement to Bureau of Standards Circular 48, "Standard Methods of Gas Testing." The correction tables are arranged in a sequence most convenient for use in connection with the proposed record sheet. The record forms for calorimeter tests which are shown in the circular have been used for some time and found to be complete and convenient. It is hoped by the Bureau that these forms will be adopted wherever possible so that there will be greater uniformity in operating methods and the records used. The Bureau is willing to loan the original plates for preparation of electrotypes for these blanks to any one desiring to print them.

This publication is in response to numerous requests for a brief and concise set of operating directions for a gas calorimeter, and for a convenient set of correction tables. It is hoped that this will promote greater uniformity in operating methods and in records and facilitate the application of proper corrections.

It is assumed that the operator is thoroughly familiar with directions and precautions as outlined ln Circular 48. The directions given here are a brief summary of the full instructions contained in that circular, together with the tables needed for daily laboratory use.

The correction charts are arranged in a sequence most convenient for use in connection with the proposed forms of record sheet, starting from the upper left-hand corner of the sheet and continuing in the normal order of application of the corrections.

The larger form recommended for calorimeter test records has been in use for some time and has been found to be complete and convenient. The three tests called for on it are recommended whenever possible, but when numerous tests are taken daily, as for control purposes at the gas works, the small form may be preferred. The smaller form contains all the essential data of the larger, but can be used for a single test only.

There is also included the summary taken from Circular 48 of the procedure for recording and computing a test. From this summary the exact application of the blank forms and correction tables will be evident.

Solvay Alkali

Paper-backed booklet; 56 pages, illustrated. Issued by the Solvay Process Company, Syracuse, N. Y.

This booklet is an explanation of the various forms and uses of Solvay Alkali, and gives notes on Alkalimetry as well as chemical and commercial tables conveniently arranged for the use of the consumer.

Several interesting views of the company's various plants in different cities are shown in conjunction with the description, and comparison tables of some of their products, these being:

Soda Ash—All grades and densities.
Caustic Soda—All grades of solid and ground.
Bicarbonate of Soda—Pure and commercial grades.
Sesqui-Carbonate of Soda—Pure.
Modified Sodas (So-called Neutral Sodas)—All grades.
Causticized Ash—All grades.
Crown Filler—Pure hydrated Calcium Sulphate.
Calcium Chloride—All grades of solid, granulated and liquid.
Salt—Commercial Grades.
Limestone—Pulverized and graded sizes.

Production of Spelter in Canada 1916

Bulletin 428. Paper-backed; 60 pages. Issued by Canada, Department of Mines, Mines Branch, as reported by Albert W. G. Wilson, Ph.D. Obtainable at the Government Printing Bureau, Ottawa, Canada.

A brief report on the production of Spelter in Canada, summed up by the author in the following: "This report contains the results of an investigation into the costs of the various raw materials required by the zinc smelting industry, made during the months of May, June and July, 1916, and supplies estimates as to the probable cost of these materials at certain points in Canada. The conditions under which Canadian zinc ores are now sold to a foreign market are discussed, and the terms of a number of contracts for these and similar ores are stated. The report is concluded with a statement of the author's personal opinions in regard to certain matters in connection with the home treatment of British Columbia zinc ores."

News of the Gas Industry

Gas Shortage in Germany —Consumers on Half-Rations for Lighting and Cooking

New gas regulations have been issued in Berlin, which virtually put the ordinary consumers of gas on half-rations from now on, says a dispatch from Copenhagen. The new orders are made necessary because of the inability of the gas works to obtain a supply of coal. Similar measures are impending throughout the empire. The announcement of the new orders loosed a general storm of indignation. The Berlin newspapers demand to know how home life will be possible with the household supply of coal reduced so greatly.

According to the newspapers, the minimum hot water supply in homes is limited to certain hours three days a week, and the use of alcohol and kerosene for cooking purposes is prohibited. No substitute lighting methods are available, and now the use of gas for cooking virtually is barred. Indications in the papers are that the outburst of indigation is not unwelcome to the imperial commissioner of gas and electricity and the municipalities, who charge that coal is being kept at the mines in order to manufacture briquettes.

The gas works at Harburg now supplies gas only between the hours of 10 o'clock and noon.

Assessment of Tacoma, Wash., Company Reduced

Reduction of $100,000 in the assessed valuation of the Tacoma Gas Company, now in the hands of a receiver, was made by the board of equalization meeting recently. The assessed valuation was placed at $656,000, and the company's attorneys asked for a reduction of $150,000 in their assessment. A long argument ensued between the attorneys, B. S. Grosscup for the bondholders, Walter Christian for the receiver, and W. A. Leuenberger, general manager, and members of the board. The company produced figures showing that taxes last year amounted to 38 per cent of their net income and 11 per cent of their gross income.

A Meter to Every 5 Persons Is Record of Malden & Melrose Company

The Malden (Mass.) & Melrose Gas Company is a conspicuous example of a company operating in suburban residential territory which has well-nigh absorbed the domestic business available. This is indicated by the fact that among a population of about 160,000 there are approximately 32,000 gas meters, or one for every five persons. This represents one for nearly every family. In the same territory there are about 12,000 electric meters.

The gain in gas meters for 1916 was 1,500, while that of electric meters was 1,900. Both the gas and the electric utilities are under the same control, the engineering managers being Charles H. Tenney & Company, Boston.

Company at Beaver Dam, Wis., Asks for Rate Increase

The application of the Beaver Dam Fuel & Light Company for an increase in its rates has been filed with the railroad commission at Madison, Wis., and the commission has ordered a hearing on the matter at its offices in Madison on Sept. 7, at which time all interested parties are notified to be present and present their evidence and arguments.

The present rates charged by the Beaver Dam company are $1.50 per thousand for the first 2,500 ft., $1.40 per thousand for the next 2,500 ft., $1.30 for the next 35,000 ft. and $1.10 per thousand for all over 40,000 ft. used. These rates are gross and are subject to a discount of 20 per cent.

Rate Increase by Derby, Conn., Gas Company

In a recent advertisement inserted in the local papers the Derby Gas Company announced an increase in the rates of both gas and electricity commencing Aug. 15.

The gas increase amounts to 10 cents per thousand cubic feet.

The company has been forced to make this advance on account of the rapidly increasing cost of gas coal, steam coal, gas oil, labor, taxes and all supplies.

New Jersey Commission Admits Need But Temporarily Denies Increase

The Board of Public Utility Commissioners recently denied the application of the New Jersey Northern Gas Company for approval to increase its rates to consumers. The company was formed some years ago by consolidation of the Flemington and Lambertville Gas Light Companies. Its claim for permission to increase rates was on the ground that it is now costing considerable more to manufacture gas than it did a year ago.

The Utility Commission admitted that if the high cost of manufacturing of gas continues additional revenue will be needed, but the testimony on this application failed to indicate how much added revenue would result from the increase, which would be fair all around.

Three New Wells Reported by Columbia Company

Columbia Gas & Electric Company reports the bringing in of three new wells on the virgin territory consisting of 13,000 acres in the Cabin Creek district. Twelve other wells are drilling. Well No. 863 on the Imperial tract was struck with an initial flow of 125 barrels of oil a day. The second well, No. 926, on the Big Sunday Creek tract, was struck, and engineers say it is good for about 9,000,000 cu. ft. of gas and 100 barrels of oil daily. The third well in the Cabin Creek district was struck with a flow of 13,000,000 ft. of gas and 100 barrels of oil.

Pennsylvania Company Wants Ready-to-Serve Charge

A new question, raised by the Bucks County Public Service Gas Company, that of charging consumers 75 cents for overhead or a "ready-to-serve" charge, will be brought before the Public Service Commission at a session to be held September 20. Several gas companies in the eastern part of the State have established this system, which has nothing to do with the minimum charge made monthly whether gas is used or not.

Pennsylvania Manufacturing Company Installs Producer Plant

In order to supply protection against the recent ruling of the Pennsylvania Gas Company by which that concern makes it likely that the supply of gas to factories will be cut off during winter periods when the demand is heavy the Raymond Manufacturing Company of Corry, Pa., has begun work on a new building of special construction, just north of their present plant, which is to house a new gas-producing plant. The company will thereby be able in case of need to generate their own gas supply for their big gas-electric power plant and will be in a position to avoid shut downs like those of last winter.

The Raymond interests have decided to at once erect a suitable building and to install one unit of a gas-producing plant. This unit will produce the gas from coal and will be of sufficient capacity to handle a large percentage of the company's power requirements. The plant will be so planned that second units can be added on short notice and if necessary the company will be able in the future to produce its own fuel supply.

With an extensive gas engine installation, the Raymond plant found a serious menace in the present situation curtailing the consumption of natural gas and the recent increase in rates. It is to meet this situation and at the same time continue to utilize their elaborate gas engine equipment that the gas producer plant has been decided upon. Ellis Harvey is now placing the heavy foundations for the new addition.

Government May Fix Coal Prices Rather Than Leave It to States

Decisive steps to curb high coal prices are expected from President Wilson and the Federal Trade Commission this week.

Under Government assurance that unlimited profits are not to be tolerated, working conditions in all industries are improving, the Labor Department reported.

The mine fields alone are still showing the effect of discontent at profiteering charged to operators by the Federal Trade Commission.

Until the President authorizes the commission to sit with powers granted under the food bill, the Government looks with disfavor upon any movement by the States to assume charge of the coal situation. The National Defense Council fears if the States mix into the coal control trouble it may serve to seriously embarrass the Government in its plans for sweeping action.

Justice Carter, "fuel dictator" of Illinois, had planned to arrange an inquiry into coal transportation problems. The operators have agreed to accept his decision on reasonable coal prices.

It is understood, however, that the Government does not wish him to fix any price schedule now. It is pointed out that if the States fix prices then the Federal Trade Commission establishes another price, under authority vested by the President, confusion may arise with the coal operators, like the railroads, as the result of having too many bosses.

An understanding between the Government and the State authorities on a course of procedure was expected before many hours from this writing.

Timely Advertising by Baltimore Company

When Prices Are Lowest
Right now, when the markets are full of fresh vegetables and fruits, and prices are lowest, because of the abundant supply, is the time for you to do your share toward putting away a supply for the Winter.
Nothing should go to waste. You can help. You can aid in conserving foodstuffs.
It is easy for you to can and preserve most, if not all, of your next Winter's supply of vegetables and fruits.
Write for our canning folders or stop in and get them. They will tell you the correct and best ways to can and preserve at home on your gas range
Let All Who Can Can Gas!
The Gas and Electric Co
Lexington Building

ONE OF THE CANNING AND PRESERVING ADS IN BALTIMORE NEWSPAPERS

Old Colony Reports 28 Per Cent Output Increase

The Old Colony Gas Company (Mass.) reports output for the month of July, 1917, of 10,904,000 cu. ft. as compared with 8,525,000 cu. ft. for the same month of the previous year, an increase of 28 per cent.

Gas Company Installs "Old Swimmin' Hole" in Display Window

"The old swimmin' hole" immortalized by James Whitcomb Riley, the late Hoosier bard, has been moved into the east display window of the Brazil Gas Company at National and Forest Avenues, Brazil, Ind., to help advertise a gas instantaneous water heater.

A small meandering stream winds its way through a shady woods in the background. This tumbles over a cascade of rocks and spreads out into a pool—waist deep and "the finest swimmin' pool you ever saw." Two boys in bathing suits have the swimmin' hole to themselves all day. The window is arranged with growing grass, moss, ferns, rustic logs and rocks and one can easily imagine himself on the bank of his favorite swimmin' hole of his boyhood days. The only difference is that occasionally hot water dashes over the rocks. This is from a Humphrey Automatic Heater in the west side of the window for which the whole window display is arranged. It has already begun to attract much attention.

Repeat Order for Industrial Fuel Department, Boston

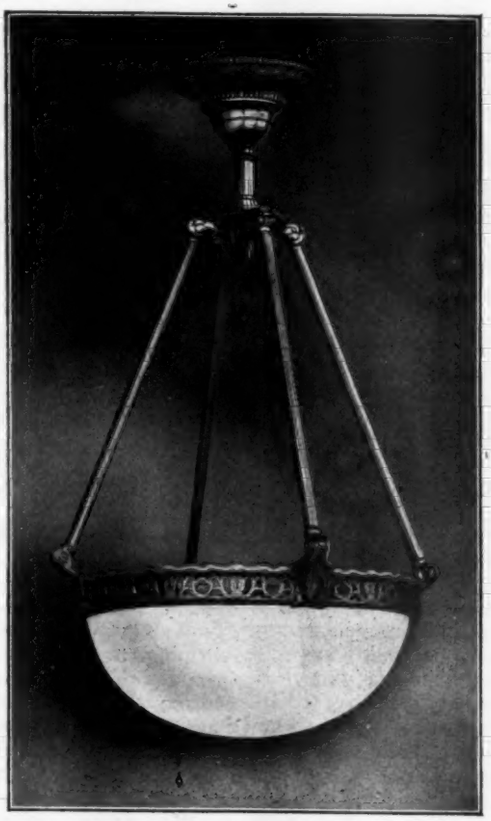
A "repeat order" is one of the very best evidences of satisfied service. This sort of endorsement is frequently being accorded the industrial fuel department of the Boston Consolidated Gas Company. A recent instance is the order of a second gas-fired steam boiler by Charles N. Miller, a confectioner with plant on Traverse and Beverly Streets. The establishment already had a 7-hp. boiler of the gas-fired type.

West Virginia Steel Plant Installs Gas Producers

Gas producers are being put in at the galvanizing department of the Wheeling Steel & Iron Company's plant. The work is progressing rapidly. When completed it is hoped the producers will keep a full supply of gas on hand at all times, and thus enable the mill to run steadily, especially during the winter, when in very cold weather it has heretofore been found difficult to obtain a sufficient supply of natural gas to properly operate the plant.

High Intensity Gas Light for Public Buildings, Show-Rooms, Stores, etc., Gives 1,000 Candle Power

In the 1917 Gas Company Supplement just issued by the Welsbach Company there are illustrated several new and original lamps. One that stands out especially to us as being the most important and helpful to gas companies throughout the country is No. 1658, illustrated on page 2.



1000 CANDLE POWER GAS LIGHT

It is Georgian design; a big, massive, handsome looking fixture that will do credit to the gas lighting industry. The length over-all from top of canopy to bottom of bowl is 42 in. The width of the bowl ring is about 24 in.

This fixture was designed purposely for the lighting of large areas where high intensities are required, such as public buildings, gas company show rooms, department stores, churches, etc.

SHOWING BURNER ARRANGEMENT

UNIQUE BURNER ARRANGEMENT

The fixture can be quickly converted from a five to a ten or fifteen light unit or used separately, according to the amount of light required.

Tests on water gas at 25/10 pressure show that when equipped with fifteen Reflex No. 33 mantles and without bowl it gives the following candle power:

1,023 directly below the lamp; 1,140 at 45 deg. and 906 on the horizontal.

Among the special features of the lamp are one chain pull, pilot filter body, C-C lighter, hinged bowl ring, etc.

We understand this fixture is now ready for the market.

Indianapolis Company May Have to Ask for Increased Rates

Although it had been expected that the Citizens' Gas Company, of Indianapolis, which has leased the Indianapolis Gas Company and has been furnishing artificial gas to the people of Indianapolis at 55 cents a thousand cubic feet, would declare a special dividend, to pay a part or all of the accruals to which the stockholders are entitled when the earnings justify further distributions, under the 10 per cent per annum provision of the charter, it has been announced here that the company will pay only the customary semi-annual dividend of 5 per cent on its capital stock on September 28, which is the usual period for the distribution of earnings up to July 1 of each year.

Under the company's charter provision is made for 10 per cent annual dividends and these are accruing dividends. In the first lean years of the company's operation a part of these dividends were not paid, and since competitive conditions have been eliminated and the company has been making money fast—until the war time conditions came on—the company has been striving to pay the back dividends.

EXPLANATION OF GENERAL MANAGER.

J. D. Forrest, general manager of the company, explained the action of the company by stating that although the payment of the regular dividends would leave some reasonable margin of surplus accumulated last year, the unfavorable experience of the company during the first half of the year caused the directors to feel that it would not be wise to pay a special dividend at this time.

"The volume of business done by the company during the first half of the year," he said, "was very greatly in excess of anything in its previous history, but unfortunately the in-

creased operating costs have made the net returns much less favorable than they were in 1916. The gross operating revenue increased 21½ per cent over that of the first half of 1916, but the operating expenses increased 37 per cent, while the action of the county and the state tax boards on the company's valuation for taxation, if allowed to stand by the courts, will cause an increase in the state and local taxes for the year 1917 amounting to about $75,000, and the increase in the freight rate on coal, which became effective July 1 will mean an added expense to the company at the rate of over $90,000 a year.

By-products Carry Company Through.

"The balance remaining to the company at the end of the six months available for distribution to its stockholders amounted to only $80,000 after making necessary allowances for the increased taxes. Since the net profits to the company from its benzol and other special business amounted to $182,000, it will be seen that the regular operation of the company for the first half of the year resulted in a net loss of $100,000. Only the business outside of the regular operation enabled the company to pull through.

"A very large item in the increased expense of the company was the increased cost of coal. The average cost of the coal used, which included a great deal taken from stock and charged at the lower prices of last year showed an increase of 45 per cent, as compared with the cost of coal for the corresponding period last year, while the cost of the coal bought in June of this year as compared with that bought in the same month last year showed an increase of 51 per cent. The other plant operating expenses, covering labor and miscellaneous supplies, showed an increase of 47 per cent. The effect of all these increased costs resulted in a net balance available for distribution in dividends of only $80,000 as compared with $226,000 for the first half of last year, or a falling off of about 65 per cent.

"In spite of the unfavorable showing for the first half of the year, it is our hope that conditions will so improve as to enable us to continue to supply gas to the people of Indianapolis at the very low rates which prevail here. The company could not continue indefinitely under such conditions as existed during the first half of the present year, when all expenses were increasing and the price of the product sold remained unchanged on account of public regulation, as far as gas was concerned, and on account of contracts as far as coke and by-products were concerned.

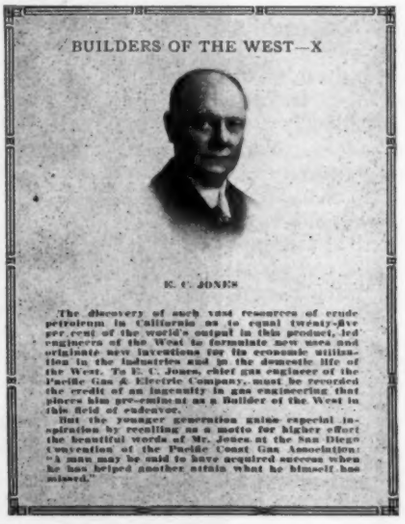
Expiring Coke Contracts

"However, as contracts for coke have expired, new ones have been made at the prices which have prevailed from time to time, and therefore the outlook for the company during the second half of the year, when most of the old contracts will have ceased to operate, is somewhat more encouraging. The company has sold the greater part of its coke output at prices which are well below the present prevailing market, but which are nevertheless considerably above those which prevailed under the old contracts. If the company could continue to sell coke at competitive prices there is no doubt that the results for the year would be quite favorable. On the other hand, if the government fixes prices for coke, which will seriously curtail this source of income to the company, it will doubtless be necessary for us to go to the public service commission with a request for the readjustment of gas rates before the end of the year.

"When I speak of improved coke prices, I make almost no reference to the change which has occurred in our prices in Indianapolis. We made some advance in our price to the local dealers and agreed to supply them with 25 per cent more coke than they took last year, but these prices obtained on this increased Indianapolis business remain considerably below the cost of the coal which enters into the coke. If all of our coke business were on the Indianapolis basis, we could not pull through, but as the market has advanced and new contracts have been entered into, we have sold an appreciable portion of our coke at prices which will be remunerative. Whether this experience can continue over the winter will depend very largely on the policy of the government with reference to prices on coke. Unless the Citizens' Gas Company can get somewhat more for coke than the coal costs, it cannot be prosperous. It is therefore easy to understand that the situation of the company may later become as discouraging in prospect as the experience of the last six months has been in reality, and may possibly become more so."

Electric Journal Styles Gas Engineer a Pre-Eminent Builder of the West

For a number of issues the *Journal of Electricity* has been running a series of personal notes telling of the work of various prominent men in building up the great industries of the West. The recent issue honors E. C. Jones, chief engineer of the Pacific Gas & Electric Company. The illustration herewith shows the manner in which the series is run, this one being "Builders of the West.—X."


BUILDERS OF THE WEST—X

E. C. JONES

The discovery of such vast resources of crude petroleum in California as to equal twenty-five per cent of the world's output in this product, led engineers of the West to formulate new uses and originate new inventions for its economic utilization in the industries and in the domestic life of the West. To E. C. Jones, chief gas engineer of the Pacific Gas & Electric Company, must be recorded the credit of an ingenuity in gas engineering that places him pre-eminent as a Builder of the West in this field of endeavor.

But the younger generation gains especial inspiration by recalling as a motto for higher effort the beautiful words of Mr. Jones at the San Diego convention of the Pacific Coast Gas Association: "A man may be said to have acquired success when he has helped another attain what he himself has missed."

As is noted above E. C. Jones is credited for his ingenuity in gas engineering, which has resulted in helping to open up the vast resources of crude petroleum in California and the formulating of new uses and new inventions for its economic utilization in the industries in the West.

New Name for Michigan Company

So far as an active corporation is concerned the Houghton County Gas Company has passed into history. The old concern is still doing business with headquarters in Hancock, Mich., but under a new name.

Papers have been filed with the county clerk giving the name of the concern as the Michigan Gas & Electric Company. The new name does not signify a new ownership.

The Harbor Gas Company, Painesville, Ohio, has recently been incorporated with a capital stock of $10,000. Harry E. Hammer is the incorporator.

Southern Counties Gas Company Asks for Forty Year Franchise

The Southern Counties Gas Company of California has made formal application to the Harbor Commission of Los Angeles for a forty-year franchise to cross the tide-lands and other lands under the jurisdiction of the harbor department.

It was explained that the gas company proposes to install mains that will serve Pier No. 1 in the outer harbor, Pier A in the Wilmington district, the plant of the Los Angeles Shipbuilding and Dry Dock Company and other concerns at the harbor.

If the franchise is granted Mayor Woodman and harbor officials announced they would insist that provision be made in the franchise for 14 or 15 cent gas for industrial purposes.

The company announces that it proposes to install two lines now and additional pipe lines later. The application is made by Secretary W. S. McFarland in behalf of the company.

Company Assures Cincinnati of Gas Supply

President Freeman of the Union Gas & Electric Company, sent a letter to Mayor Puchta and the Cincinnati Council, written March 15, 1917, telling of the magnitude of the work. The communication is as follows:

In compliance with your demand that we state promptly and clearly what steps we have taken or are taking to provide an entirely adequate gas service for domestic consumers, we beg to say:

First—We have arranged with the Ohio Fuel Supply Company, through radical improvements, to be made in their transportation lines, to increase their contract requirements of gas furnished to our company at Norwood to 20,000,000 ft. daily. This will give us an increase of 12,000,000 ft. daily over the amount which that company furnished during the extreme cold spells of this past winter. With this additional supply of gas from the Ohio Fuel Supply Company, we will be able to furnish a satisfactory volume and pressure of gas throughout Madisonville, Hyde Park, Oakley, Avondale, Clifton, Walnut Hills and Mt. Auburn, where the service has been inadequate previously in extremely cold weather.

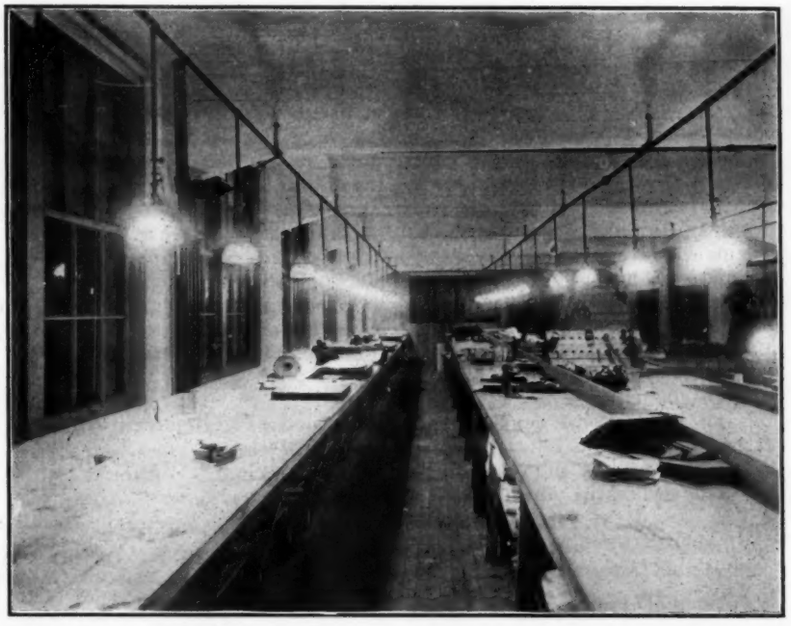


Photo Courtesy of Welsbach Company
CUTTING ROOM OF SHOE FACTORY USING GAS LIGHTS

Second—We propose to construct additional high pressure gas feeders to the extent of approximately 46,500 ft., which will serve to maintain an even distribution of gas at satisfactory pressure in other sections of the city where the present feeders have proven inadequate in cold weather, including Cheviot, Westwood, Price Hill, Mt. Airy, College Hill and Mt. Healthy.

Third—We have contracted for a producer gas plant with a capacity of 15,000,000 cu. ft. of producer gas per day, which will be installed at our West End works and will be in service for the coming winter. This producer gas will mix with the natural gas and serve to provide an additional daily capacity, when needed, of 15,000,000 cu. ft. of gas at normal pressure. The combination product of gas will fully meet the requirements of the city ordinance as to heating units and pressure.

In order that these additional facilities may be available for this coming winter, orders have already been placed for the materials and the work will be pushed energetically. With these provisions, which involve a very large expenditure on the part of this company and the Cincinnati Gas & Electric Company we are confident that the supply of gas to domestic consumers will be ample during the coming winter and thereafter. We trust that our plans, as above outlined, will meet with your approval.

Business Men Call Big Patriotic War Convention

Immense Gathering Participated in by Commercial Leaders from All Parts of the Country, to Develop Plans for Still Greater Service in Carrying War to a Quick and Successful Conclusion

An emergency call has gone forth from the Chamber of Commerce of the United States to the business men of the country for a great war convention to be held at Atlantic City, September 17-21. It is expected to be the largest gathering of business men ever held and will show to the world that American business recognizes its duty in this crisis and stands solidly behind the Government in war. Incidentally the object of the meeting will be to encourage our Allies and strike fear into the heart of the enemy.

Should Show World Our Determined Spirit

"The nation's business to-day is war," declared R. Goodwyn Rhett, President of the National Chamber, "and every business man, firm, and corporation must now subordinate individual interests to the common cause. This they are ready to do, all that is needed is direction as to what to do. The results of this meeting, which has been called by our Executive Committee which has been in session almost continuously

for the past three months, will show business the way, and inform the public as well.

"Victory in the great struggle in which we are engaged depends largely on the power, intelligence and speed of the industry of the United States; upon our ability to produce faster and better than ever before, the things necessary to efficient warfare. This convention of American business men should show, not to our people alone, but to the whole world, in what spirit and with what determination business faces the task ahead of us. Out of common council we hope to see what we may do to develop still greater efficiency and render greater service in carrying the war to a quick and successful conclusion.

What Business Men Will Discuss

A principal topic of discussion will be the duty that business owes the Government in war. The strongest possible emphasis will be laid upon this. There will come the question of how business of the country may render even greater service in winning the war. This will include what may be done to control prices, how priority may be most quickly and effectively established, how greater efficiency in land and water transportation shall be developed, how we may best provide for and protect our forces on land and sea and those dependent upon them at home, and what steps may be taken for better education of the nation on the issues at stake in the war.

Ways and means by which business must readily adjust itself to the conditions produced by the war will be considered. Also there will come the questions of how we shall provide for business enterprises not essential to the nation in war time, food conservation, its special importance to business men, industrial relations and employment problems, and foreign trade, banking and credit in war time.

After the War Preparations

Of particular interest will be the readjustment after the war for which business must prepare. This will include the question as to what will be the course of prices on raw materials and finished products after the war, how we shall plan for replacing our men in industry after they return from the war, and what new responsibilities in international relations may be expected after the war.

It is said to be not only the patriotic duty of every live business man who can possibly arrange to do so, to attend the convention in order to show emphatically where the business men of the United States stand in the present crisis, but all will be urged to come in order that each may gain from such a meeting all possible knowledge as to how he can plan more intelligently to be of greater service in the common cause.

Ohio Gas & Electric Corporation of Delaware has been incorporated recently. Capital stock, $500,000.

Bituminous Coal Report

Weekly report on the production of bituminous coal and the causes of loss of working time, compiled by the Geological Survey, Department of the Interior, August 11, 1917.

A further decrease from 75.8 to 74.6 in the percentage of full-time capacity realized in actual output is reported for the week ended July 28, compared with the week ended July 21. While production held its own in Ohio and increased slightly in eastern Kentucky and Tennessee, it declined in Illinois, Indiana, western Pennsylvania and southern Virginia. Labor shortage and minor labor disturbances caused fluctuations in the output of the Oklahoma-Arkansas and Kansas-Missouri areas.

Percentage of Present Full-Time Output Produced in Certain States by All Operators Making Weekly Reports

State	Per cent of full-time output produced in week ended: June 9	June 16	June 23	June 30	July 7	July 14	July 21	July 28
Illinois	77.2	78.1	76.7	72.7	79.6	79.5	*77.1	76.0
Indiana	71.8	71.9	68.3	69.5	73.0	73.0	69.3	67.8
Ohio	80.2	84.1	70.5	65.5	75.3	69.3	69.2	69.4
Western Pa	71.0	74.2	75.5	72.3	75.4	78.6	77.9	76.3
Southwestern Va	....	....	....	....	76.9	85.6	89.6	88.2
Eastern Kentucky and Tennessee	79.4	78.1	63.2	72.8	75.0	78.4	81.0	82.6
Alabama	....	....	....	....	....	....	....	91.4
Kansas and Missouri	....	....	70.2	74.5	85.6	78.0	78.2	69.5
Oklahoma and Ark.	....	....	....	66.1	61.6	75.7	69.2	79.0
Total reported	74.5	76.8	73.5	72.0	77.4	77.5	*75.8	†74.6

* Changed from figure reported in preceding bulletin by inclusion of late reports.
† Does not include Alabama.

Carloads of Coal Originating on Principal Coal-Carrying Roads

District	Week ended: July 7	July 14	July 21	July 28	Aug. 4
Alabama, Eastern K., and Eastern Tennessee	*7,203	*9,539	*8,794	9,415	7,581
Illinois, Indiana, and Western Kentucky	14,882	18,047	17,923	16,766	14,404
Pennsylvania and Ohio	38,718	44,384	44,372	44,180	41,338
West Virginia and Va. smokeless	10,155	10,896	10,709	10,733	10,212
West Virginia and Va. high volatile	14,507	17,616	16,652	17,860	16,648
West of the Mississippi	1,402	1,708	1,704	*1,813	1,794
Total	*86,867	*102,190	*100,154	*100,767	91,977

* Revised from last report.

Gas Rates Increase at Newburyport, Mass.

The Newburyport (Mass.) Gas & Electric Company has given notice of an advance in the price of gas of 25 cents per 1,000 ft., making the new price $1.70. There is the usual discount for payment within twelve days, making the net price $1.50. The increased price of coal, labor and supplies is the reason given. The new price is effective Sept. 1.

Reports of cars of bituminous coal loaded on 13 roads (representing more than one-half the total shipments) are given in the following table. The decline in production that began after the middle of July continued through the first week of August, in every district represented in these figures. The record for the first week of August is, however, above that for the first week of July, but below that for the first week of June.

The operation of mines which reported causes of lost time, representing between one-fourth and one-fifth of the production of the country, is shown for the three weeks from July 9 to July 28, in the following tables:

District and week	Full-time weekly capacity	Actual production (net tons)	Losses, all causes (net tons)	Per cent of full-time output Produced	Lost
ILLINOIS:					
July 14	965,240	756,871	208,369	78.4	21.6
July 21*	958,040	719,687	238,353	75.1	24.9
July 28	951,710	701,537	250,173	73.7	26.3
INDIANA:					
July 14	554,674	404,880	149,794	73.0	27.0
July 21	550,260	381,431	168,829	69.3	30.7
July 28	550,279	373,249	177,030	67.8	32.2
OHIO:					
July 14	447,993	310,547	137,446	69.3	30.7
July 21	556,573	385,319	171,254	69.2	30.8
July 28†	718,184	497,784	220,400	69.4	30.6
WESTERN PENNSYLVANIA:					
July 14	679,624	534,305	145,319	78.6	21.4
July 21	675,620	526,267	149,353	77.9	22.1
July 28	683,789	521,450	162,339	76.3	23.7
ILLINOIS, INDIANA, OHIO AND PENNSYLVANIA:					
July 14	2,647,531	2,006,603	640,928	75.8	24.2
July 21	2,601,578	1,888,457	713,121	72.6	27.4
July 28	2,903,962	2,094,020	809,942	72.1	27.9
SOUTHWEST VIRGINIA:					
July 14	199,740	170,982	28,758	85.6	14.4
July 21	192,347	172,380	19,967	89.6	10.4
July 28	162,441	143,315	19,126	88.2	11.8
ALABAMA:					
July 28	153,432	140,203	13,229	91.4	8.6
KANSAS AND MISSOURI:					
July 14	106,565	83,098	23,467	78.0	22.0
July 21	100,120	78,349	21,771	78.2	21.8
July 28	88,234	61,297	26,937	69.5	30.5
OKLAHOMA AND ARKANSAS:					
July 14	95,463	72,225	23,238	75.7	24.3
July 21	107,063	74,072	32,991	69.2	30.8
July 28	61,581	48,630	12,951	79.0	21.0
Total reporting causes of loss:					
July 14	3,049,299	2,332,908	716,391	76.5	23.5
July 21	3,140,023	2,337,505	802,518	74.4	25.6
July 28‡	3,216,218	2,347,262	868,956	73.0	27.0

* Changed from figures reported in preceding bulletin by inclusion of late reports.
† Includes figures for one additional association reporting for first time.
‡ Does not include Alabama.

Car shortage remains the principal factor limiting production throughout the Northern States. A better car supply is reported from Virginia and the South. Figures for Alabama, available for the first time, indicate that the mines are running with less interruption than in any other state reporting to the Geological Survey.

More than 800 mines in 12 states are now furnishing weekly statements, and with each week new districts are being added to the area reporting. The following table presents detailed reports of operations in the Pittsburgh, Irwin Gas Field, and Freeport Thick Vein districts of Pennsylvania for the week of July 21.

PERCENTAGE OF PRESENT CAPACITY ATTAINED IN WEEK ENDED JULY 28, AND CAUSES OF LOSS

	Pittsburgh (per cent)	Irwin Gas Field (per cent)	Freeport Thick Vein (per cent)
Produced	79.9	69.5	96.8
Lost, all causes	20.1	30.5	3.2
Car shortage	12.4	3.4	2.2
Labor shortage	3.7	17.8	0.8
Strike	0.1	8.5	....
Mine disability	3.8	0.5	0.2
Other causes	0.1	0.3	...

Prepared by C. E. Lesher No. 4

Personal Notes

W. K. EAVENSON, who has recently joined the force of the Long-Landreth-Schneider Company of New Brunswick, N. J., manufacturers of the Kompak water heaters, has been assigned as sales agent for New York City vicinity with office and display room at 109 West 47th Street, New York City

OSCAR A. KOTTLER of the office staff of Helme & McIlhenny, gas meter manufacturers of Philadelphia, has been in service as a Drill Sergeant at the Fort Niagara Training Camp and is now commissioned as Second Lieutenant, Infantry Section, Officers Reserve Corps.

J. H. PRIOR, formerly chief engineer of the Illinois Public Utilities Commission, has left the service of the Illinois Commission to open an engineering office in Chicago. Mr. Prior entered the service of the Illinois Commission about three years ago as assistant chief engineer and a year later was appointed chief engineer. Before that time, during the years 1905 to 1914, Mr. Prior was engineer of design of the Chicago, Milwaukee & St. Paul Railway and was engaged in the design of all structures on that railway and on its 2000-mile (3219-km.) extension known as the Puget Sound lines. Mr. Prior made two of the earliest valuations of railroad properties required by railroad regulatory and taxing bodies. Mr. Prior was educated at the Armour Institute of Technology and the University of Chicago.

THE WESTMORELAND COAL COMPANY of Philadelphia announces with deep sorrow the death of their vice-president, Harry Clifton Adams, on August 18, 1917. Mr. Adams was a graduate of the class of 1880, University of Pennsylvania. He became connected with the Westmoreland company in 1881, elected secretary in 1886, and in 1892 was elected vice-president in charge of sales. Mr. Adams was a recognized authority on gas coal, and wrote various papers on the gas coals of the United States.

P. J. NASCHOLD is now salesmanager of the Nashville (Tenn.) Gas & Heating Company, succeeding C. B. Hanley, who died recently.

D. F. BURRITT, formerly general superintendent of the National Gas, Electric Light & Power Company of Detroit, Mich., was recently appointed general manager of the Utilities Operating Company of Kalamazoo, Mich.

CHARLES C. FOUTZ, general superintendent of the LaPorte (Ind.) Gas & Electric Company, has recently accepted a position as assistant works manager for the Great Western Manufacturing Company of LaPorte.

Societies and Associations

THE PITTSFIELD (MASS.) COAL GAS COMPANY EMPLOYEES' ASSOCIATION held its tenth annual outing at Riverside Park, Springfield, August 11. The party went by train and auto to Springfield. The regular inter-department ball game was a feature of the morning's program, after which the big artificial swimming pool was a popular place. A chicken dinner was served at the park restaurant instead of the regular clam bake. The dance hall, roller skating rink and all the midway features were made use of by the party.

THE LYNN (MASS.) GAS & ELECTRIC COMPANY EMPLOYEES' ASSOCIATION held its eleventh annual outing August 8 at Quannapowitt Lake Grove, Wakefield. The party met in front of the company offices on Exchange Street at 9 a. m. and started from there in the company's spare trucks to the grove. A picnic lunch was served, which was enjoyed by all, after which a base ball game between the office and works teams was participated in, the office team winning. Many athletic events took place, the most thrilling of which was Mr. Ullven's slide from the top of a pine tree, along a wire for about a hundred yards, suspended by his teeth.

THE BROCKTON (MASS.) GAS COMPANY EMPLOYEES' BENEFIT ASSOCIATION will hold its annual outing at Glen Echo Park to-day, August 25. The trip will be made by special car from Brockton. Dinner will be served at the park, after which sporting games will take place. At a meeting of the association Monday, August 13, they voted to pay the dues of all members enlisted or drafted into the service.

Construction Notes

Difficulties Overcome in Laying Main Over Fairport, N. Y., Canal Bridge

An interesting problem encountered by the Rochester Gas & Electric Company in laying new mains in Fairport is told in a recent issue of the *Gas and Electric News:*

At the Parker Street Bridge across the Barge Canal, the pipe is carried on the floor girders outside of the sidewalk. The line is 4-in. black steel pipe and the joints are extra heavy welded to withstand the stresses due to excessive temperatures and vibrations of the bridge.

SHOWING GAS MAIN CARRIED ON GIRDERS OUTSIDE OF SIDEWALK

A picture of the bridge showing main as completed is shown herewith. This main supplies the northeast section of the village.

At John Street where the main parallels the tracks of the Rochester, Syracuse & Eastern Railway for 1,000 ft., the pipe was wrapped with burlap and heavily coated with tar to protect it from the electrolytic action of stray electric currents.

During July, 175 ¾-in. gas services were installed. In the section of the village south of the Barge Canal 325 meters have been installed and service work has been begun on the north side.

The trench excavator has been removed to Midvale. Here 2,000 ft. of trench for mains are to be excavated and the trenches for the twenty-five services to be installed.

Denver Company Has Big New Garage

With thirty-six electric trucks and as many gasoline vehicles the Denver Gas & Electric Light Company has found it necessary to greatly increase its garage facilities. Until recently the company has been using a garage which was built in 1910, but the business has grown so much since that time and so many more automobiles had to be used that the old garage was entirely inadequate to take care of the present fleet of trucks.

The new building is a one-story, peak-roof structure 140 feet by 120 feet, which provides a total gross area of floor space of 16,800 square feet. A brick wall divides the building into two sections. One is used for storage, charging and washing, and the other was built to provide proper heat, light and ventilation for repair work. The place where the electric vehicles will be stored is so constructed that 20 automobiles may be charged at the same time.

Coal Trestle and Steel Towers to Be Added to Springfield Plant

Improvements to cost more than $15,000 are to be made immediately at the plant of the Springfield (Mass.) Gas Light Company at the foot of State Street. Building permits were issued recently by Commissioner Lumis for an extension of the coal trestle, to cost $12,600, and for two steel towers to cost $3,000. The trestle will be of steel and of the same design as the present structure. Work on the improvements will be rushed.

Muskogee, Okla., Extensions

City Engineer H. H. White has begun the task of connecting the Muskogee Refining Company with the Muskogee, Okla., municipal gas line. The connection between the line and the refinery is a 4-in. pipe from the main line to the refinery yards. Within the refinery it is a 6-in. pipe. The work will be completed in about a week, it being a tedious undertaking on account of the presence of a number of pipes already in the ground around the refinery which must be passed. The connecting line is about 150 ft. in length.

Main Extension by Lansing, Mich., Company

Lansing Fuel & Gas Company has begun the laying of one and three-quarter miles of 2-in. high-pressure gas main in Greencroft, Mich.